

PRACTICAL OBSERVATIONS

ON

CHOLERA;

PARTICULARLY IN REFERENCE TO

THE TREATMENT OF THE DISEASE,

AS IT HAS APPEARED IN IRELAND, SINCE THE BEGINNING OF
THE YEAR 1832.

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THE NATIONAL ANTHROPOLOGICAL ARCHIVES

CHRONICLE

OF THE PROGRESS OF THE SCIENCE

OF ANTHROPOLOGY

AND OF THE HISTORY OF MAN

AND OF THE CIVILIZATION OF THE WORLD

AND OF THE HISTORY OF THE HUMAN MIND

AND OF THE HISTORY OF THE HUMAN BODY

AND OF THE HISTORY OF THE HUMAN SOUL

AND OF THE HISTORY OF THE HUMAN SPIRIT

AND OF THE HISTORY OF THE HUMAN HEART

AND OF THE HISTORY OF THE HUMAN MIND

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1841

THE NATIONAL ANTHROPOLOGICAL ARCHIVES

AND OF THE HISTORY OF MAN

AND OF THE CIVILIZATION OF THE WORLD

TO
DOCTOR CRAMPTON,

PROFESSOR OF MATERIA MEDICA IN THE SCHOOL OF PHYSIC IN IRELAND, ETC.

THE CHAIRMAN;

AND TO

DOCTOR BARKER,

PROFESSOR OF CHEMISTRY IN THE UNIVERSITY, ETC.,

THE SECRETARY

OF

The late Central Board of Health for Ireland,

THE FOLLOWING PAGES

ARE RESPECTFULLY DEDICATED;

AS TO THEM MAY BE ASCRIBED WHATEVER OF PRACTICAL UTILITY MAY
BE FOUND THEREIN, IN CONSEQUENCE OF THE OPPORTUNITY AF-
FORDED, AND THE ENCOURAGEMENT GIVEN BY THEM TO AN INVE-
STIGATION OF THIS DISEASE: FOR WHICH A GRATEFUL ACKNOW-
LEDGMENT IS MADE BY

THEIR OBEDIENT

AND MUCH OBLIGED SERVANT,

THE AUTHOR.

THE HISTORY

OF THE

REIGN OF

THE GREAT KING

OF THE

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PREFACE.

So many Publications upon Cholera have issued from the British and Foreign Press, since the late visit of the disease to Europe, that some apology to my Professional Brethren is really required, for obtruding upon their notice any thing further on this subject. Since its decline as an epidemic in Ireland I have read the chief of the publications alluded to, and I have not found the line of practice recommended which appears to me suited to it ; not that I have any remedies to bring forward which have not been proposed and tried by others (for it would be difficult to name one such) ; but those which, by the majority of writers, have been adhered to as a sheet anchor, I have found for the most part pernicious ; and the circumstances under which others should be employed have not been laid down with that discrimination and distinctiveness which are essential to a successful treatment of the disease. It is to be regretted that Authors,

while they have devoted hundreds of pages to contagion, quarantine, &c., have disposed of the treatment in a dozen, or less. This deficiency I do not undertake to supply, but merely to offer a contribution towards it; for though I have notes of upwards of a thousand cases which contain a good deal of valuable matter, yet their introduction would consume more time and incur more expense than I could prudently bestow upon an Irish publication. I have therefore endeavoured to throw into a limited number of pages, as much as I could of that matter which appears to prove useful at the bedside of the patient: and the above remarks, coupled with the great mortality of the disease, even in this island, constitute the grounds on which I have ventured to submit them to the notice of the Profession.

It may be proper to state on what foundation I have undertaken to impugn or modify the practice laid down by the majority of writers. In April, 1832, I was appointed an Assistant Physician to the Hospital in Grangegorman-lane, and during the six following months, in which upwards of 5000 cases were admitted to it, I was not absent

from it an hour in every four-and-twenty. A considerable proportion of these passed through my hands : so far, therefore, as opportunity is concerned, I enjoyed means of observing the disease, possessed by few, and I believe not surpassed by any other Hospital in the world. Since then I have had the charge of Cholera Hospitals in the country. It might well be expected that with these opportunities every information respecting the disease might have been obtained ; but I regret to say how much room is still left for inquiry. Certainly a much greater progress might have been made, had not so much of my time been occupied by the civil business of these Hospitals. I must also state, that I began the treatment of the disease, confiding in the practice laid down in the Indian Reports ; and after the loss of much time, the only advance I had made was the ascertaining that it was more calculated to prevent than to promote the recovery of the majority of cases. I had therefore now to commence its management anew, and from this period I found the mortality to diminish, not that the disease became milder or more tractable, but according as

the subsequent treatment was adopted, recoveries increased, whilst similar cases, treated at the same time in the old manner, proved as unsuccessful as formerly. I do not pretend to say that the practice here set forth is the best that can be employed, knowing that much improvement is to be desired and expected : I merely recommend it, until something more perfect shall appear, as more successful than any other that I have met with.

In the description of the disease I have been as brief as is consistent with the distinction of the cases which require different modes of treatment ; particularly as it has been well described by many writers.* I have been sufficiently full to enable its principal forms to be recognised ; and the Physician who comes to treat the disease will be enabled to read its symptoms for himself in the book of Nature.

* See especially Reports on the Epidemic Cholera, drawn up by W. Scott, Surgeon. Madras, 1824. 4to. Also, Monographie du Choléra-Morbus epidémique de Paris, par A. N. Gendrin, D. M. Paris, 1832.

Dublin, August, 1834.

CONTENTS.

	PAGE
Division of the Disease.....	1
BLUE TYPE	3
Symptoms	ib.
Usual progress of a Case	6
Reaction	7
Consecutive Fever	8
Discharges	9
Appearances after Death	11
Treatment of Premonitory Diarrhœa	20
Treatment of Serous Purging prior to Collapse	21
Treatment during Collapse	24
Peculiarities in the Blue Type	50
Of other Treatment during Collapse	80
Treatment in Reaction	101
Stinking Fever	115
Death and Ulceration of the Cornea	117
Management in Convalescence	120
Mortality	121
SPASMODIC TYPE	122
Treatment	124
FEBRILE TYPE	129
General Treatment	ib.
Peculiar forms of the Febrile Type	132
Anomalous Spasmodic Affections	139

PRACTICAL OBSERVATIONS

ON

CHOLERA.

NO disease, perhaps, has presented itself to our notice in so many and in such different shapes, as the Cholera which has been lately epidemic in Ireland. In so great a degree does its Protei-form nature prevail, that if the chief symptoms be abstracted from its several varieties, scarcely will a single one remain common to all of them; nor could the extreme cases of the malady be recognised as offsets from the same root, did not their occurrence at the same time and in the same place, and their connexion by intermediate links, prove their identity of origin; to which may be added, that they all evinced a tendency to pass into the same awful state of collapse, which thus appears to be its radical form. It would therefore be impossible to treat of all these varieties under one head, and as they collect themselves into three principal groups, I shall consider the disease under so many heads. In one group the most marked symptoms are those of collapse: this may be called the type of collapse, or the *blue type*. In another, spasm is the most prominent symptom: this may be denominated the *spasmodic type*. And in the third, a febrile

state prevails almost from the onset: this may be designated the *febrile type*.

This division is not only convenient for description, but really one of much practical importance, for the appropriate modes of treatment for these several types are of a very different nature. Had it been adopted from the first, much unnecessary dispute concerning the effects of remedies might have been saved, more correct notions of the manner of treating the disease would now prevail, and, I apprehend, many lives would have been rescued from the doom which the inappropriate treatment made use of was more than sufficient to occasion. I am aware that the terms by which I have designated these three divisions of the disease are not unobjectionable: for some of the worst cases of the blue type are not blue, but pale throughout; many of the spasmodic type are very blue at first; and fever is very generally met with in the latter stages of both these. But the names blue and spasmodic have been much applied to the two first divisions; and the term febrile is so peculiarly applicable to the last, that it forces itself upon us.

SECT. I.

OF THE BLUE TYPE OF CHOLERA.

Symptoms.

THE account which a patient usually gives of the manner in which he has been taken ill is, that on getting up in the morning he had a sensation of giddiness, felt weak, or even fainted; and that this was succeeded in the course of the day by lowness of spirits, oppression at the præcordia, a desire to evacuate his bowels, fulness in the stomach, and nausea. Frequently the patient goes to bed quite well, and in the course of the night awakes with an urgent call to empty his bowels and stomach. In other cases a bilious diarrhœa exists for several days, and the characteristic symptoms are suddenly superadded. He has one or more large stools, consisting of the feculent contents of the bowels, and his stomach discharges his last meal in an indigested state. Purging, of a fluid resembling gruel or barley-water, sets in, unattended by pain or griping; and he usually vomits a liquor like the latter, or like whey. He becomes weaker and dejected: his countenance loses its vivacity; a depression may be observed in the lower palpebra, and a dark areola begins to form around his eyes; his mouth becomes clammy, his tongue grey and furred, but not dry, and he begins to complain of thirst. His skin is below the natural temperature. His pulse, at this period, being in general as full as usual, might, if inattentively examined, be considered natural; but

an unusual softness and emptiness can be perceived, and it is commonly slow. Cramps in the toes, legs, or fingers, generally make their appearance now.

To avoid a repetition of symptoms in cases, it will be very convenient to distinguish collapse into its incipient, extreme, and medium states. I shall therefore consider the foregoing symptoms to denote the *first grade*, or *degree of collapse*.

Second Grade of Collapse.—The voice is husky; it appears to the patient to pass out through his ears, and he is troubled with a noise in them like that of the sea, or the sound of a distant drum, or the humming of bees; the tongue is covered with a white fur, is very cool, and flatter than natural; the thirst is urgent, and as frequently as it is satisfied the drink is thrown back; the purging continues at intervals of half an hour or an hour; the urine and most of the other secretions are suspended; the skin is relaxed and generally clammy; the lips are blue, the features sharp, and the eyes sunk; the extremities are cold and blue, and the patient often complains bitterly of cramps in the calf of the leg, thigh, toes, or fingers; the pulse is very weak, sometimes almost * imperceptible at the wrist, and generally frequent; the oppression at the præcordia is increased, and there is usually a gnawing pain, rather relieved than increased by pressure, at the scrobiculus cordis.

* It requires some tact to discover a weak pulsation in cases of cholera. As Doctor Osborne has remarked, (*Med. Gaz. Lond. Nov. 1832*,) the finger should be placed over the artery in the lightest manner, and then pressure should be made gradually. Without this precaution, many cases would be set down as pulseless, which really were not so.

Third Grade of Collapse.—The pulse is no longer perceptible at the wrist, or (which is not a better symptom) an undulation may be felt in the artery; the impulse of the heart is very weak, or cannot be felt, and its sound is dull; the voice is squeaking, or reduced to a low whisper; the patient sometimes gives a peculiar dry husky cough; the respiration is more frequent than natural, and expiration is suddenly performed, the parietes of the thorax being allowed to drop through debility; from the same cause, too, the patient often points to what he wants, instead of asking for it; the skin, except in some peculiar cases, is livid or blue, damp, or even wet with cold perspiration; it is shrivelled or sodden on the hands, and so inelastic, that when pinched up, it does not for some time return to its former situation; the subcutaneous veins on the hands and insteps are turgid; the skin on the abdomen is wrinkled, and on pressing it a peculiar doughy feel is perceived, and a gurgling noise is heard; the vomiting is less frequent, and the purging has in general ceased; his tongue is cold, flabby, and blue at the sides; his breath feels cold to the hand, and the small degree of heat in the trunk appears to be preserved only by the bedclothes, yet he frequently throws them from his chest to cool himself; and he lies with his eyes turned upward and half closed, and with his arms hanging over the side of the bed, or wherever chance throws them, until a cramp or urgent thirst rouse him from this state. The temperature of the tongue at this period varies generally from 78° to 85° F. I have not found it so low as that of the apartment, nor the temperature of the extremities lower;

Dr. Copland, however, states, that it “often sinks below the heat of the surrounding air, both on the surface of the body and in more internal parts.”*

Usual progress of a Case of the Blue Type not submitted to treatment.

The patient in general passes rapidly into the third grade of collapse: the purging ceases, or watery fluid flows involuntarily from him through the bed; the cramps and vomiting subside; the pupils become dilated, the sight dim, and the conjunctiva bloodshot; the hearing becomes dull, the præcordial oppression increases to a most distressing degree, and he tosses himself about in anxious restlessness. At length he becomes more insensible to his state and sufferings, from stupor, and ultimately coma, supervening; his toes and fingers are affected with involuntary † motion; his respiration becomes more frequent and laborious; and death at length terminates the scene, seldom preceded by tracheal râle. This frequently takes place within twenty-four hours. Old persons and infants are the most liable to this quick course. More commonly patients linger on to the second, third, or even to the fourth day; and in the course of this time it is not unusual for them to complain of a severe gnawing pain in the bowels. This is followed in a few hours by tenesmus, purging of bloody fluid, and sometimes vomiting of the same. Death may now be considered as not very distant.

* Of Pestilential Cholera, by J. Copland, M.D.—Lond. 1832, p. 90.

† I have frequently seen this motion continue for several hours after the removal of the subject to the dead-house.

The disease does not always, however, take this course. The symptoms may spontaneously subside in any stage of collapse. When this takes place in the first grade, the patient becomes drowsy, falls asleep, awakes improved, and passes into a state of health, without any or with very little constitutional disturbance. In the second and third grades, the cessation of the purging, vomiting, and cramps, appears to allow him time to rally his strength, and to afford a respite; he becomes easier, the tongue loses its coldness, a faint pulsation returns to the bend of the arm or wrist, and the forehead becoming warm and dry furnishes a gleam of hope. He may lose this, or even any further ground he may have gained, and fall back into his former state; but if improvement go on, it is evinced by the face first, and the rest of the surface afterward, becoming warm and dry; by the pulse becoming distinct at the wrist, and by the removal of the præcordial oppression. At first the heart retains the frequency of its beats in collapse, but the pulse becomes slower, and is now usually found to be from 80 to 90: the vomiting has in general ceased; and if there are any stools, they are few, occurring only at intervals of some hours, at first gruelly, then grey, slate-coloured, dark or black, and now slimy, adhering to the bottom of the bed-pan, and abominably fetid. The thirst is greatly diminished; he becomes drowsy and sleeps, the eyelids being still but partially closed. This is the change from collapse which has been called *reaction*. Sometimes there is very little constitutional disturbance, and the transit to health is rapid. More commonly the tongue becomes dry, furred,

and brown ; the cheeks and conjunctiva red ; the skin dry ; and there is altogether a febrile state, well known under the name of *the consecutive fever*.

The patient has now escaped from the alarming state of collapse, and a prospect of recovery is opened out ; but the issue of the case is still doubtful. The degree and danger of the consecutive fever are proportioned to the extent and duration of the previous collapse.—When it terminates favourably, although he may sleep a great deal, and on some occasions heavily, yet he awakes at intervals ; he looks about more, remains awake for longer periods, and becomes more lively ; the tongue becomes moist and cleaner, and the natural secretions are restored ; the urine accumulates in the bladder, pain is felt in its situation, and after some fruitless efforts he succeeds, about twelve or twenty-four hours from the commencement of reaction, in emptying it of one or two pints of urine, usually clearer and more acid than natural ; the skin recovers its elasticity, and he asks for nourishment.

When this fever proceeds to a fatal termination, he sleeps very long and heavily, the eyelids not being closed ; the respiration becomes slower than natural, and high ; the pulse may be full, but it is very soft, and it finally assumes an empty feel, and becomes very weak ; the cheeks and lips are of a dusky or purplish red colour, are flaccid, and hang loose ; the countenance has a squalid, haggard appearance ; the skin on the hands is inelastic and purplish ; the tongue is dry, coated with a brown or black fur, or sometimes glazed ; the teeth are covered with sordes ; he is in a state of stu-

por ; if roused from it, he answers questions rationally, but his eyes immediately turn up again, and he falls back into the same state ; sometimes he mutters ; at length he becomes comatose, his cheeks are puffed out in expiration, he sinks into a certain degree of collapse, and dies, though urine and bilious configured stools may have been passed.

Of the Discharges in the Blue Type.

The bowels are generally emptied of their feculent contents by two or three motions, and then stools are voided, sometimes resembling gruel, sometimes like thin barley water, or like horses' urine, sometimes like barley water, which has lain in a vessel a sufficient time to separate into a clear fluid and a flocculent sediment, and at other times like clear water. The first is the most favourable ; and when the last is passed, the case is a very serious one indeed. The stool like barley water is that most frequently met with. Its sp. gr. varies from 1010 to 1015. It is generally alkaline, but occasionally neutral. It is destitute of feculent smell, but it has a peculiar odour—that of a fresh intestine well washed. When filtered, a somewhat muddy fluid passes through, and a drab-coloured slimy substance remains on the filter. Most experimenters agree in considering that the former is the aqueous part of the serum of the blood, holding in solution a portion of its salts, and a small proportion of its albumen ; and there is every reason for entertaining this view of it. The proportion of albumen is very small : in a few in-

stances heat produces as copious a precipitate as in an ordinary specimen of albuminous urine: in general, however, it occasions only a cloudiness, and sometimes it does not at all affect it; but it always yields a precipitate with corrosive sublimate. It has been maintained* that this fluid is not derived from the serum of the blood, because the latter is alkaline, and because cholera stools, if they have any effect on litmus paper, redden it. The premises are, without doubt, true; but I do not perceive the *vis consequentiæ* of the conclusion. The nature of the slimy part is more difficult to be determined. It has been in general considered to be fibrin derived immediately from the blood. It is not pure fibrin, but appears to be a mixture of fibrin, albumen, and mucus. It does not yield with nitric acid as yellow a solution as pure fibrin, and it is only partially soluble in acetic and strong muriatic acids.

Another sort of stool not unfrequently met with is the foregoing, tinged with uncoagulated blood. Celsus appears to have been well acquainted with the appearance of this stool, and with the period of the disease it occurred at. He correctly compares it to the washings of fresh meat:† but when this sort of purging has continued some hours, it assumes a thicker and a more gelatinous consistence.

The fluid discharged by vomiting is generally like thin barley-water or whey, and is of a more uniform appearance than the dejections. It is generally either

* Practical account of the Epidemic Cholera, by W. Twining, Surgeon, Lond. 1833, pp. 30-32.

† De Medicina lib. iv. 11.

neutral or acid: in a few instances I have found it alkaline; and then it had the same appearance and smell as the dejections, and was, I apprehend, discharged from the small intestines. Bloody fluid is sometimes vomited: but a much more frequent discharge from the stomach is that of a green fluid, the description of which will be more conveniently connected with the consideration of its treatment.

Of the principal Morbid Appearances observed in those who have died of the Blue Type.

Inflammation of the intestines, and occasionally of the brain and its membranes, is the chief morbid change stated to have been found by those who observed the disease in India. Mr. Corbyn reports, that “there was general inflammation of the bowels, liver, stomach, and lungs. These were indications to follow a directly opposite mode of treatment” (viz. to stimulants).* Notwithstanding the great number† of practitioners that coincide in this statement, and the opportunities afforded by military hospitals for pathological investigations, I am constrained to question its correctness; for no collateral circumstances have been mentioned, nor have any appearances been described which *prove* the existence of inflammation. The mucous membrane of the

* Reports on the epidemic Cholera which has raged throughout Hindostan since August, 1817.—Bombay, 1819. Ap. p. 2.

† Bombay Reports, pp. 34, 69, 84, 109, &c. Reports on the epidemic Cholera Morbus as it visited Bengal in 1817, 18 and 19, drawn up by James Jameson, Surgeon, Calcutta, 1820; pp. 68, 70, 71, 76, 258, 298, 291, &c. Madras Reports, pp. 63, 90, &c.

intestines, it is true, has been by many described * as coated with lymph, and the surface of the brain also has been said to be covered by it: but observers who have displayed a far greater familiarity with morbid anatomy, have shown that these are misstatements; and that the former appearance is occasioned by the mucous membrane being smeared with a peculiar creamy substance, while the latter is owing to infiltration of the pia mater with serum. It has been reserved for some of the distinguished members of the faculty in Paris to describe with minuteness and precision, the deviations from a healthy state which are connected with this disease.

In those who have died during collapse the intestines contain fluid resembling the stools last passed, and frequently a large quantity of very fetid gas. The mucous membrane is smeared with a cream-coloured slimy substance, and is unusually soft: sometimes it is so friable that in scraping off this substance with the scalpel, the villous coat is detached from the submucous tissue. It is generally thinner than natural; sometimes it is thick and pulpy.† This alteration of structure is most frequently found in the stomach and large intestines. In these situations also (particularly in the large intestines), blood is very often found extravasated under the villous coat, either in dots or in patches of a dark or black colour. This ecchymosed condition of the intestines gives them a gangrenous appearance, and probably consti-

* Bombay Reports, p. 84, Bengal Reports, pp. 68, 69, 261. Madras Reports, pp. 177, 284.

† Mr. Whyte was the first to describe properly this state. Bombay Reports, pp. 123, 129.

tutes the gangrene so often reported. Mr. Whyte candidly acknowledges that he at first mistook it for gangrene. Doctor Alderson, of Hull, has given * some excellent plates of this appearance. The mucous membrane of the large intestines (and, in a few cases, of the stomach) has sometimes an eroded appearance; in other instances it has already given way, and then its surface is smeared with grumous blood, and the intestine contains bloody fluid. The latter state has been observed when bloody stools have been voided. A great number of vessels, varying in diameter from the thickness of a bristle to that of a hair, are seen to ramify under the peritoneal coat of the intestine, and the mucous coat is still more minutely injected. Frequently a vessel is seen to terminate abruptly in a small dot of ecchymosis. In some places the vessels are so crowded as to give to the membrane a crimson, lilac, or an almost black colour. In the cœcum, colon, and rectum, the vascularity is of a deep red colour; in the jejunum and ileum of a lilac, and in the stomach and duodenum it is of a brighter hue than either of the former. In almost every case the glands of Brunner are preternaturally developed, and very often those of Peyer also. MM. Gerardin and Gaimard state that the tubercular bodies observed have been proved, by injection of the lymphatic system, to be glandules belonging to it, and not the glands of Brunner.† Those which came under my observation certainly did not belong to the lymphatic

* Outline of the History and Progress of Cholera at Hull, by J. Alderson, M. D. Lond. 1832.

† Du Choléra Morbus en Russie, en Prusse, et en Autriche. Paris, 1832, 8vo. p. 128.

system : for they were depressed in the centre where there was an orifice ; and when the portion of intestine had been thoroughly washed, pressure emptied them of a creamy substance, identical with that which coated the mucous membrane. These follicles must therefore be regarded as contributing largely to this creamy substance ; but not altogether so, for it is found in the bladder. M. Boillaud says he has sometimes found them in a state of ulceration.*

The liver seldom exhibits any remarkable deviation from its usual state. In one case I found it pale and dry like a boiled liver : sometimes blood has been found extravasated from its vessels. The gall-bladder generally contains a moderate quantity of yellowish-green or very dark bile.

The spleen is sometimes natural ; in other cases it is gorged with very dark blood, and friable.

The pancreas and kidneys are healthy. The urinary bladder is so much contracted that it appears to be pasted up against the pubes. Its mucous surface is usually smeared with a creamy substance ; and a similar lining is sometimes found in the ureters.

The heart looks like an injected one, owing to its distension with blood. Frequently its surface is mottled by extravasations of black blood under the serous membrane, where it loosely invests its base. The large veins (the cavæ, vena azygos, vena portæ, and pulmonary veins) contain an unusual quantity of blood. The blood is every where of a very dark colour : sometimes it is

* *Traité Pratique, Theorique et Statistique du Choléra Morbus de Paris* ; par J. Boillaud, Profess., etc. Paris, 1832, p. 255,

almost as black as ink. It is found much less extensively coagulated than is usual: in the heart it is semi-coagulated; in the veins it is fluid, but thicker than natural, and glistening on the surface like tar.

The depending parts of the lungs are gorged with dark fluid blood. The chordæ vocales are smeared with a creamy substance* similar to that which lines the intestinal mucous membrane. This is the cause of the peculiar voice, which is therefore justly regarded as a characteristic symptom of the disease. This lining occupies all the interior of the larynx, it extends for some distance down the trachea, and the mucous membrane there is more vascular than natural.

On exposing the brain, the veins on its surface are observed to be gorged with black blood. The choroid plexus is sometimes so much injected, that it is quite black. The cortical substance of the brain is darker than natural. The substance of the cerebrum, cerebellum, and spinal chord, has been generally found of the natural consistence: in some instances it has been found softened.† In all the Indian reports, I have not been able to find more than a single instance

* Is the mucous lining of the Eustachian tubes coated with a similar substance? I have not had an opportunity of examining them. If it is, their passage must be thereby obliterated; and then, the vibrations of the air in the mouth not obtaining a direct entrance to the tympanum, the patient hears his own voice *solely* from without, which would explain the sensation of the voice passing out through the ears (so frequently complained of). Every person who has been affected with a severe coryza must have noticed the same thing, as a temporary sensation, when the nasal mucus in passing from the nares into the pharynx happened to choke the orifice of either or of both tubes.

† *Traité par M. Bouillaud*, p. 265. Report upon the Cholera at Dantzick in 1831, by John Hamett, M.D. Lond. 1832, p. 54.

wherein the spinal chord was examined: viz. in the case of Lieut. A. M. (Madras Reports, p. 161). This was a well marked case of the blue type: venesection was twice performed with bad effects; and on examination after death, the spinal marrow was found preternaturally injected with dark and red blood. It has been stated,* that inflammation existed in this case; but this is a mistake. I am indebted to Doctor Falloon for having had permission to examine the spinal chord in one case, and this is the only opportunity I have had of so doing. I found the cellular membrane between the vertebræ and theca unusually injected: it contained vessels nearly as large as a crow's quill, and so gorged with black blood, that they were cylindrical. There was also some serous infiltration into it, which gave it a gelatinous appearance; and opposite the dorsal vertebræ there were a few patches of ecchymosis. On slitting up the theca, some coarse vessels containing black blood were observed on the spinal marrow; their smaller branches did not contain any of this blood. No alteration in the substance of the chord was perceptible. Blood has been found extravasated on the surface, and into the substance of the brain.

In cases where death took place subsequently to the establishment of reaction, the mucous membrane of the intestines has been found† more vascular, and the vessels of a brighter colour. The contents of the intestines have frequently been tinged with bile, and sometimes

* Madras Reports, p. xxxiv. ; and Cyclopædia of Practical Medicine, p. 392.

† Traité par M. Bouillaud, p. 117.

they contained solid fæces. The bladder has been often distended with urine. The brain was more gorged with blood, and the pia mater was frequently infiltrated with serum. In the only two cases of this description which I examined, I found the entire brain very soft.

Such are the principal appearances met with. We at once perceive that the chief of them are the altered condition of the blood, and the state of the alimentary canal. The former alone is sufficient to account for death. What is the nature of the latter? Is it inflammation, or any effect of it? This question has been answered in the affirmative by almost all writers. Even M. Bouillaud, while he describes the appearances with the greatest minuteness and accuracy, denominates it "*une veritable phlegmasie*."* This mistake, emanates, I apprehend, from a devotedness to favourite doctrines. Amongst those who witnessed the disease in India, Mr. Alexander constitutes an exception to those who insist upon inflammation, and he declares that no such state exists.† In the same opinion I must concur; for I have not seen traces of it after death in the best marked cases of the disease; I have not met with descriptions of it, nor have I met with any symptoms that would lead me to expect it. I do not, however, deny, that in the progress of the consecutive fever, inflammation may arise; but even then I must hold that it is rare, and in a great measure accidental.

The manner in which the chief phenomena of the disease take place appears to be as follows:—An impres-

* L. c.

† Madras Rep. p. 221.

sion (of the nature of which we are ignorant) is made upon the nervous system, and especially upon the sympathetic nerve, and the spinal chord. The function of the viscera thence supplied is thereby interfered with, particularly that of the liver, kidneys, and mucous membrane of the intestines. The circulation through the kidneys and liver is thus diminished, and their proper secretions are suspended, or nearly so : this is proved by the passing of gruelly stools, and by the urine being nearly suspended in some cases of Cholera, wherein the circulation is as active as natural, and the blood exhibits no deviation from a healthy state. The effect of this through the renal and hepatic arteries is merely an accumulation of more blood in the aorta ; but through the vena portæ, it must be attended with a different result. The blood of this vessel, which should circulate through the liver, is accumulated in its trunk, and thereby in the vessels which form it, and ultimately in the mucous membrane of the intestines, whilst the aorta continues to supply this membrane, as when its veins relieved it. Hence it is that we find the mucous membrane so much injected. Under these circumstances, either some portion of the blood must escape from the surface of the membrane, or blood must be extravasated into the substance of the intestines, from rupture of the vessels. Both of these phenomena occur : hence the serous stools, the patches of extravasated blood, the death of parts of the intestine, and the bloody stools. The blood is rendered thicker by the escape of its aqueous part, and a mechanical obstruction to its circulation is thus made. Inspection of the mucous membrane

strengthens this opinion ; for the injected vessels are of a coarse description, and we are unable to trace the dark blood into their smaller branches ; we observe it to be abruptly arrested in them, or to communicate with a dot of ecchymosis, indicating that the vessel had there given way.

Doctor Falloon, who has devoted much time and attention to this disease, had the kindness to show me a portion of intestine in an emphysematous state. In the jejunum, the villous layer was elevated from the submucous tissue into vesicles about the size of half a common pea. The peritoneal coat of the cœcum was elevated in the same manner. This was observed in a female twenty-one years of age, who died after an illness of forty hours : she was examined about twenty-four hours after death. I am disposed to refer this phenomenon to putrefaction ; for on my seeing the body forty-four hours after death, there were manifest traces of decomposition of the intestines. I have⁷ seen dark green patches on the intestines, and on the parietal layer of the peritoneum in contact with them seventeen hours after the death of a Cholera patient. This emphysematous appearance has been alluded to by Mr. Twining.* I may mention here, that in bleeding patients, when reaction had taken place, I have sometimes seen bubbles of gas escape from the vein.

* Practical Account, &c. p. 211.

*Treatment of the Premonitory Diarrhœa, and of Serous
Purging prior to Collapse.*

When Cholera is epidemic in a district, a lax state of the bowels or diarrhœa are very prevalent amongst the inhabitants. Thin, feculent, bilious stools are passed in various frequency, and are usually attended with some griping and debility. Persons thus affected are able to go about, and to attend to their ordinary business; but they are extremely prone to be attacked with Cholera in some form. These stools glide gradually into the characteristic discharges; it may therefore be regarded as a premonitory symptom, and its management may with propriety be noticed here previously to our entering upon that of the blue type. Castor oil with laudanum and Daffy's elixir, Gregory's powder, and other aperients, have been popular medicines for this complaint: but this practice cannot be too strongly reprobated, for every one experienced in the disease knows that many have been precipitated into their grave by it. It were well that the advice of Doctor Sydenham had been more attended to: he has compared* this practice to an attempt to extinguish fire with oil, and the comparison is just. Whilst this state of the bowels exists, the individual is in a precarious situation: he is walking on the brink of collapse, and he knows not the moment he may be tumbled into it; even in an hour he may be so altered as scarcely to be recognised by his

* Opera Univ. Lond. 1705. p. 138.

friends, and may be removed beyond a hope of recovery. The examples of this have been numerous. Instead of increasing, we should at once check the diarrhœa. This may be effected with certainty and safety by some of the vegetable astringents. Sometimes a single dose of tinct. Kino and tinct. Catechu in aq. Menthæ pip., with tinct. Cardam comp., stops it. When there are severe griping pains in the bowels, small quantities of laudanum or opium may be given: in these cases the elect. Catechu comp. and pulv. Kino comp. are useful preparations. When there is flatulence or acidity, magnesia or creta preparata should be combined. And if there be a diminished action of the liver, not referable to weakness of the circulation, small quantities of Hyd. cum creta or pil. Hyd. may be conjoined (calomel is apt to gripe): otherwise, they had better be omitted, for Mercury is utterly useless as a preventive. Cases have been recorded * wherein persons affected with ptyalism have been seized with Cholera in a severe form, and I have seen similar instances at the Grange-gorman-lane Hospital. In those cases of diarrhœa, diaphoretics and nauseating emetics have been recommended;† this practice is very apt to throw the patient into collapse.

This bilious diarrhœa, if not properly treated, may gradually pass into the characteristic purging of Cholera, or the latter may commence at once. When this occurs in weak or elderly persons, they are very soon

* Bombay Rep. p. 9.—Bengal Rep. p. 151.

† The Cholera of Sunderland, by W. R. Clanny, M.D., pp. 89 and 93.

prostrated. The same happens even in the youthful and strong, when the mind is depressed by grief or fear; but when a strong and vigorous person is attacked under other circumstances, it is astonishing to what extent serous purging sometimes takes place before collapse is induced.

Owen Dogherty, a strong man, forty years of age, employed at a brewery in this city, was attacked with purging of watery fluid; this continued for three days, during which time he kept up his strength with porter, and remained at his usual laborious occupation of lifting casks, &c. On the third day he counted about fifteen stools; in the evening, becoming considerably worse, he was obliged to withdraw from his work, and at half-past ten at night he was placed under my care, in the second grade of collapse. He had taken five pills, and was now under the influence of a narcotic. Vomiting disappeared, symptoms of coma rapidly set in, his hands had a shrivelled and sodden appearance, and his state was so unfavourable as to leave no room for expecting recovery. On the fifth day from the attack he was so much improved by ammon. carb. gr. v., liq. Æth. ol. ℥i, tinct. Card. comp. ℥i, in mist. Camph. ℥i every second hour, by shaving the head, the application to it of a sinapism and blister, and by a small bleeding from the arm when the pulse recovered itself, that a hope was entertained, which was realised on the seventh day. He also got small doses of calomel, at first every second, and afterwards every fourth hour; but I am sensible that this rather injured than improved him. The influence of the venesection in removing stupor in

this case was so obvious that it could not be doubted. At first a dark sluggish stream ran down the arm ; presently it became striped in the centre with red ; and when ʒvi had flowed, the orifice contracted, and the blood spouted in a jet of an uniformly red colour to the distance of a few inches. The arm was now tied up ; the pulse became more free and sharp ; he felt himself lighter and much relieved, and every symptom of coma vanished. The temperature of the stream of blood was 96° F. ; and its sp. gr. at about 94° was 1058. The first urine voided by him was very acid, had a sp. gr. of 1018.5 at 64° F. ; and when submitted to heat, it afforded as large a precipitate as the albuminous urine of dropsical persons usually does.

A person thus affected with serous purging which does not advance with rapid strides toward collapse, is in so recoverable a state, that if a fatal issue ever ensue, it must arise from mismanagement. Calomel and opium have been the favourite remedy for this ; and that it possesses some influence in checking it I cannot doubt, for I have found it in many instances sufficient to put a stop to the symptoms. But the symptoms sometimes subside without any treatment, and in other instances patients have been sent into hospital under the influence of opium, with the purging still unchecked, and have died : I cannot therefore recommend this treatment. The most successful that I have made trial of consists in the exhibition of astringents,—those mentioned above ; or the acetas Plumbi, if the purging is profuse. The patient should be sent to bed : from 10 to 20 grs. of acetas Plumbi, dissolved in half a pint of

distilled water, by the aid of 10 minims of acet. dist., should be administered per anum, and either the vegetable astringents or acetas Plumbi may be given by the mouth. The latter may be given in doses of two grains every second hour, dissolved in distilled water, with the addition of a few minims of acet. dist. Very few doses are necessary, and in twelve or twenty-four hours the patient will be commonly found free from complaint.

Treatment during Collapse.

Persons affected with Cholera are very backward in believing it. This very frequently occurs at the commencement of the disease, when the symptoms are still mild; but it is not uncommon for persons, even pulseless, wet, cold, and with a husky voice, to ask whether "it is that disorder they have," though they have beheld many of their friends die about them of it. The serous stools being passed without pain leads both the patient and his friends to cherish a hope that he has it not; but this circumstance should, on the contrary, confirm them in the opposite opinion. Even when the patient does entertain a suspicion of it, a peculiar listlessness and indifference to his dangerous situation (a part of the disease) hang over him, and prevent him from applying for relief, in consequence of which it is his friends that usually raise the first alarm.

When a person is seized with Cholera, he should at once be made to assume the horizontal posture: if the bed-room to which he is to be removed is on another

floor, he should be carried to it as much as possible in the recumbent posture, and not suffered to walk. No one would *a priori* expect, and perhaps few, who have not witnessed it, will credit the degree of injurious influence exerted by the upright position, particularly in ascending a height. Persons hearing that many died in consequence of their not having made a sufficiently early application for relief, have come to the Grange-gorman-lane Hospital, to inquire “whether they were getting Cholera,” as they had a few loose stools. In some of these instances the symptoms were so slight, that they were admitted rather as a matter of precaution than from any strong proofs of the existence of the disease. They felt themselves so strong that they indignantly refused to be carried up to the ward, as was customary, and they were consequently allowed to walk. On their reaching their destination a visible change had taken place: they asked for a seat; their countenance was altered, their eyes had an amaurotic appearance, the pulse was fluttering, and purging set in. Some of these patients died. In the earliest case or two of this sort that I met with, I thought I must have formed too favourable an opinion of the patient’s state on his first appearance; but subsequent instances proved that it was not so, and it became a matter of general notoriety in the hospital that the cases of those who walked to their wards, *cæteris paribus*, turned out more unfavourably than those of others. One of the parishes in this city sent its patients to the hospital sitting in a covered inside jaunting-car. These so frequently arrived in a dying state, with the head lying on the shoulders, and the eyes

amaurotic, that I was enabled from it to recognise them amongst the other patients as having been conveyed in that car; and sometimes, on opening it at the hospital, the person has been found absolutely dead. At length, this parish was provided with a horizontal conveyance, and thenceforward such hopeless cases were not brought from it.

The patient being placed in bed requires some agreeable cordial after the fatigue of removal, stripping, &c. A spoonful of punch made with good whiskey, or of mulled wine, may be given at short intervals. No time is to be lost in administering an astringent enema: that of the acetas plumbi, as directed in p. 23, is the best I know of. If this be quickly voided, it must be as quickly repeated; but if it be retained half an hour, we may await the further progress of the purging; and if in the second half hour another motion take place, it should be repeated. Heat should be applied to the feet; and if necessary to the sides, where the hands may have the benefit of it. The most convenient mode of effecting this is by a tin stomach-warmer filled with hot water, a fold of the blanket being interposed. This is a very useful utensil in the management of Cholera patients: enveloped in flannel, it retains its heat for some hours, and it may be renewed in a moment, or modified in any required degree. When not at hand, its place may be supplied by jars and bottles, or by bags of heated salt. Heat thus applied imparts a sensation of comfort to the patient, and it appears to possess some influence in relieving cramps: but a bath of air heated by spirit of wine, as first introduced in India, and at one time tried

on a large scale at Grangegorman-lane Hospital, is, to say the best of it, useless; and sometimes I have seen the patients injured from their alarm lest the bed-clothes should take fire.

We shall suppose the patient to be in the first grade of collapse. If he has not already vomited, it is a matter of much importance not to unsettle his stomach, as this is attended with an increase of collapse: and I think it, therefore, better to postpone the administration of medicinal stimulants, although they may appear indicated for the prevention of a further increase of collapse. We shall best succeed in preventing further collapse by restraining the purging, by preventing vomiting, and by keeping up the patient's spirits. If serous fluid be poured out into the stomach, vomiting will ensue; and to obviate this effusion, the acetate of lead should be given by the mouth, as well as in enemata. Three grains may be given in $\mathfrak{z}\text{i}$. of distilled water with five minims of acet. dist.; or it may be given in punch (if made with distilled water), and thus the appearance of medicine will be avoided, the idea of which often carries nausea with it. It may be repeated every hour in two grain doses until the serous discharge shall be materially diminished, or until from ten to fifteen grains shall have been taken. It may be apprehended that so free an exhibition of this salt would be attended with unpleasant effects. I commenced its exhibition in September, 1832: since that I have administered it many hundred times, cautiously feeling my way up to the doses recommended above, in which I have given it to between one and two hundred persons; yet none of the

deleterious effects of the metal have appeared. The extent to which it might be given with impunity I have not ventured to fathom ; but thus far, at least, it is perfectly safe. I endeavoured to preserve the metal in the state of an *acetate*, on the authority of a paper published by Doctor A. T. Thompson, of London. In October, 1832, Doctor Falloon was so struck with an account given him by one of my patients, of the comfortable effects of the *plumbi acetate*, that he resolved to try it : he had an opportunity of doing so in one or two months afterwards, and now, after upwards of a year's most extensive experience of it in enema, he informs me that he has not met with a single instance wherein it was productive of injury. It will be sometimes found to fall short of our wishes in checking the serous discharge ; but on the whole, it is a valuable medicine in the treatment of the blue type ; and it is much to be regretted that its suggestion by Baron Dupuytren, which took place so early as February, 1832, was not sooner and more extensively acted upon. The patient must now be watched with the closest attention, for in the space of an hour a material change may take place in him. In general, he does well, and is out of danger in the course of twenty-four hours.

But if we find him to lose ground, and to be sinking into the second grade of collapse, we cannot defer stimulants longer. Carbonate of ammonia is one of the best : from twenty to thirty minims of the *sp. ammon. arom.* or five grains of the *ammon. carb.* may be given with one or two drachms of the *sp. lavand. comp.*, *tinct. card. comp.*, or *tinct. cinnam.*, in an ounce of

inf. menthæ. simp. with a little syr. zing; and it will be necessary to repeat it at intervals of an hour at first, and afterwards of two or three hours. The plumbi acetæ cannot, of course, be now given by the mouth; but when there has been a prospect of the stomach bearing catechu or kino, I have found their addition to a draught similar to the above very beneficial.

A country gentleman, on his way to England, was seized one morning with Cholera at his lodgings in this city. The inmates of the house became alarmed, and would not allow him to remain: he was consequently obliged, at two P.M., to take refuge in the hospital at Grangegorman-lane, where the superintending physician* had fitted up one of his own apartments for the reception of such cases. In his absence on the business of the hospital, this patient came under my care, and subsequently I had the advantage of his assistance, with that of Doctor Falloon. He was in the second grade of collapse: his pulse was very weak and intermitting; his skin livid and very cool; tongue cool; voice feeble, and having the characteristic tone: he passed several profuse watery stools since morning; had no vomiting; felt but one cramp; and was now distressed by a tight feel across the epigastrium. The absence of vomiting connected with this degree of collapse, his fat habit of body, and being fifty years of age or upwards, rendered his case a very unpromising one. I immediately commenced the exhibition of catechu and carbonate of ammonia, giving ʒi of the tinct. catechu with ʒi

* Owen Lindsey, M. D. Insp. Gen. of Hospitals.

of the sp. ammon. arom. and ʒii . of the tinct. card. comp. in cinnamon water. I also ordered calomel in doses of three grains.

Within the next seventeen hours he had thirteen serious stools, and fluid also oozed from him in bed; but by the expiration of this time the purging was checked by the repetition of four such draughts as the foregoing, and by an enema of ʒi of nitrate of silver in ʒx . of distilled water. No vomiting occurred, the tightness across the epigastrium was removed by a blister, and he was now so far improved as to be considered in a fair way of recovery.

On the second day, the pulse becoming weak, the sp. ammon. arom. was resumed, with liq. æth. ol. and given to the extent of some doses.

On the third day, in voiding urine for the first time, he passed a pint and a half at once. His voice had now lost its husky sound, and he was in a febrile state.

On the fifth day, his pulse having an angry feel, at 88, his skin being dry, thirst increased, and his tongue being dry, furred, and brown, we considered it necessary to take some blood from the arm. The blood flowed at first black, then streaked with red, and when ʒvi had been drawn, it was entirely red; ʒii more were taken, and then the arm was tied up. His pulse was now more developed, and he expressed himself relieved.

Venesection to the same extent was repeated twice afterwards, saline draughts were administered, his bowels were freed by rhubarb with carbonate of magnesia, and he was well on the ninth day. The entire quantity of calomel given in this case was two drachms,

yet it did not exert any specific action on the system. It griped him very much, and probably increased the fever, whilst (I am satisfied) it was of no service.

The majority of cases which present themselves do not admit of the exhibition of these vegetable astringents, as they are apt to sicken the stomach. We must, in such instances, try carbonate of ammonia without them, as recommended in p. 22; or with the substitution of aqua calcis for the inf. menthæ. Frequently carbonate of ammonia thus given increases vomiting: I have then sometimes found advantage from adding it to an effervescing draught of citrate of soda. This is less nauseous, and more likely to be retained by the stomach than one of citrate of ammonia. When we succeed in the exhibition of ammonia, we must be careful not to continue it too long. This is an error I often fell into at first; for if it be given to a pulseless patient, and continued until the pulse recover its natural developement, even though it be then stopped, he shall have gotten too much. As soon as the pulse is distinctly perceptible at the wrist, the intervals must be lengthened; and in laying it aside altogether, we must anticipate the full restoration of the pulse, instead of following it. The cessation of the purging, vomiting, and cramps—the return of heat to the tongue—the removal of the clammy state of the skin, and tranquillity of the patient, are also indications for diminishing its quantity, for these symptoms bespeak the approach of reaction.

Camphor sometimes answers very well: but, to be of any material use, it must be given suspended in an amylaceous emulsion, or in pills properly made. The

liq. æth. ol. and sp. æth. nitr. in small doses, are good auxiliaries, when the stomach retains them ; but when irritable, it is useless to try either these or camphor. A drachm of sulphuric æther in an ounce draught, is so stimulant a dose, that it is always injurious. Such acrid stimulants as mustard and capsicum occasion a great deal of local irritation, and are particularly apt to injure. Musk has been given ; but I am not aware that it has been tried in a sufficient number of cases to determine its character.

If ammonia or other stimulants increase vomiting, their use must be abandoned ; for whatever slight stimulus that may be imparted to the system by them, during their short stay in the stomach, is more than counterbalanced by the debility occasioned by vomiting : and thus, instead of invigorating the patient, they really increase his state of collapse. A considerable time elapsed before I properly understood this effect of stimulants ; for observing the patient to sink more and more into collapse, I attributed it to the intensity of the disease, and considered stimulants the more indicated ; whereas in truth, this increase of collapse was in many cases a result of the exhaustion occasioned by vomiting. The mere occurrence of vomiting is not, however, a sufficient reason for withholding mild stimulants altogether ; for when serous fluid is poured out into the stomach, it will discharge it, except it be in a state of atony, and stimulants appear rather to diminish than to increase the quantity of the serous fluid. It is the increase or the frequency of vomiting that is to induce us to lay them aside. Another circumstance which forbids the

exhibition of stimulants is the vomiting of mere mouthfuls of fluid, or a straining after emptying the stomach.

When we cannot employ stimulants, aqua calcis, either alone, or with a small proportion of good whiskey, generally agrees with the stomach, and helps to check the serous discharge. An ounce may be given every half hour or hour till the vomiting and purging cease. A trial of aqua calcis was suggested to me by Doctor Falloon, and my experience of it leads me to say, that thus given it is a valuable addition to our resources. Mr. Corbyn has mentioned it * as a mean of diminishing thirst. The following case, though tedious, I shall relate, as it is an instance of recovery (due I think to the use of aqua calcis) from a form of Cholera so hopeless that I considered it useless, except *pro forma*, to order any thing. It also exemplifies the sudden changes and embarrassing difficulties met with in the management of Cholera patients, who have been rescued from a state bordering upon dissolution.

M. D., a woman thirty-four years of age, was brought to the Cholera Hospital in Enniscorthy at three P.M. She went to bed free from complaint on the preceding night, and slept well till five A.M.: on awakening she felt herself heavy. At ten A.M. purging commenced, and in the five following hours she had eight or nine stools, unattended with pain, and the last she described as being like water. Vomiting did not commence till

* Treatise on the Epidemic Cholera, by Frederick Corbyn, Surgeon, 8vo. Calcutta, 1832, p. 204.

shortly before her admission to hospital; and then she was in the third grade of collapse. Her pulse was 84—could be counted at the bend of the arm, but at the wrist there was only a trace of pulsation. Her extremities were blue, cold, and flabby; her tongue was flabby and nearly cold, and she had a great sensation of weakness. She had been now four months nursing; and her case was altogether of so bad a character that I looked upon it as hopeless.

She was ordered to take calom. gr. x immediately, and gr. iij. every second hour afterwards to the third dose. Some punch, a mustard poultice to the epigastrium, ℥ij of laudanum in a starch enema, and the following draught every hour, were also directed:—

Ammoniæ carb. gr. v.

Inf. Menthæ simp. ℥i.

Confect. arom. gr. x.

Syrupi. Zing. ℥ss. M.

— *half-past eleven p.m.*—Now considerably worse. The pulse could not be counted at the bend of the arm, and the respiration was quite hurried. She had been purged and vomited, and felt two cramps in one of her legs since the last report. The sensation of sinking continued. I now considered that she would die in the course of twelve hours.

I ordered ℥viiij of aq. calcis and ℥ij of whiskey, and directed ℥i of the former to be taken with ℥ij of the latter every half hour.

Second day, eight a.m.—Very great improvement in the symptoms and in her feelings, so much so that there was now a prospect of recovery. Her skin was warm, dry, and more natural to the feel: her tongue was warmer, but not yet of the natural temperature: there had not been any purging or vomiting since four A.M.:

her voice was greatly improved in strength, and she spoke in expression of much general improvement.

To have tea and some punch.

— *one p.m.*—Pulse 120, small and having a flabby feel, sensible at the wrist. Tongue flabby and cool. She vomited once since, and did not now appear so well.

R.—Calomelanos ac confectionis aromaticæ, utriusque grana duodecim: misce et divide in pilulas sex. Capiat unam secunda quaque hora.

— *half-past six p.m.*—Much worse. Vomited a lumbricus since last report. Pulse failing, 128. Skin very cool. Her thirst continued: she slept a little, and she complained of “a great load on her heart.”

The same quantity of aq. calcis was ordered to be given as before: also coffee with whiskey.

Third day, a quarter past one a.m.—Symptoms and feelings much improved. Skin warm and dry: pulse 96, unequal: no vomiting. Her breasts were now beginning to swell, and she passed urine for the first time half an hour before this report. She considered the aq. calcis of great service to her.

— *half-past twelve p.m.*—Had a little retching lately. One copious and very dark stool. Found relief from $\bar{3}v$ of suck being drawn from her breasts.

Ordered $\bar{3}vj$ of aq. calcis to be taken as before.

Sixth day.—Her head was shaved, as her face was flushed and her eyes heavy.

Ninth day.—Since last report there was a gradual improvement until this date, notwithstanding frequent attacks of diarrhœa, which were with difficulty checked, and fits of weakness, attended with præcordial oppression and sinking. She continued in a febrile state; her

pulse was not now frequent: it was small and soft; her tongue was white, with a longitudinal brown streak in the centre.

A blister was applied below the left mamma: and opiates, with anti-spasmodics and mild stimulants were given, to remove the diarrhœa and fits of weakness.

Fourteenth day, midnight.—Since last report she was attacked with a pain in the forehead; this was relieved by the application of a few leeches, and by blisters: her bowels also became regular. Spasmodic fits of coughing occurred occasionally. At this hour she was suddenly attacked with great dyspnœa; and her respiration was very sonorous, apparently from spasm affecting the larynx. In the space of a few minutes her pulse became so weak that it could not be counted at the wrist; her extremities became cold, clammy, and livid; she had slight cramps in her fingers; with difficulty she was able to utter so far as to beg of the nurse not to quit her; and altogether she appeared as if she would not live longer than a few hours.

A sinapism was applied to the spine and throat, a strong enema of assafoetida and oil of turpentine was administered, and she was given at intervals three such draughts as the following:—

R. liq. Æth ol.

Et sp. Ammon. arom. a ʒss.

Tinct. opii Camph. ʒij.

Misturæ Camph. ʒi.

Syrupi Zingib. ʒi. M.

In the course of two hours she revived, and became able to speak. She then said that this attack was ushered in with pain in the head, which was now very severe; and that during the greater part of the paroxysm she

was deprived of consciousness. Her head was now rather hot, her pulse was steady, and she had a great deal of numbness in her arms and legs, with paralysis of the left side to a certain extent. Six leeches were now ordered to the head, and a long narrow blister to the spine. During the application of the leeches the sonorous respiration returned, and the pulse became weak; the leeches were therefore removed: shortly afterwards she fainted.

Eighteenth day.—The pain had not permanently left her head, but relief was derived from re-shaving it, and from the occasional application of three or four leeches and blisters. Her pulse was very feeble, and she was so weak as to require a considerable quantity of wine. Heat could not be preserved in her feet except by artificial means; but the head was sometimes hotter than natural. She had taken sulph. quin. with apparently good effect. A seton was now inserted in the nape of the neck.

Thirty-fourth day.—Since the foregoing report she had improved much. Soon after the insertion of the seton the pain was relieved, and subsequently it subsided, returning, however, frequently: its seat was in the left temple and across her eyes, which were so weak that she could not bear the full daylight or that of a candle. She was affected with a form of hectic: every evening from four to seven o'clock she became heavy and very weak; sometimes she had chilliness and slight rigors; the skin became very cool, and the pulse feeble; she passed a restless night, and after four or five o'clock in the morning she dozed a little, and awoke heavy and

drowsy as if she had taken opium, on which account she frequently said she would rather not fall asleep. She then became lively and cheerful until one, P.M. On several occasions she had paroxysms resembling that of the fourteenth day, but not so severe; sometimes, while awake, she screamed and called the nurse, begging of her to prevent her from falling out of the bed, though she was circumstanced in it as usual; and it required some time to satisfy her that she and her bed were not being overturned. There was no delirium. Her tongue was clean; she had little or no appetite; and her strength was supported by jelly, wine, and broth enemata. The enemata were also useful in keeping her bowels free, and in thereby diminishing flatulence, to which she had a great tendency, and which often appeared to produce alarming paroxysms of debility. She was so weak that sitting up produced fainting. All this time the pulse remained slow (from 60 to 72), small, and extremely soft. Acidum sulph. arom., tart. ferri, and quin. sulph. were given; the latter in enema when it disagreed with the stomach. The tart. ferri did not appear to be of any use: during the exhibition of the sulphuric acid the pulse improved, and lost some of its flabbiness, but the pain in the head returned: the sulph. quin. was of decided benefit, and appeared most useful when combined with camphor and pil. hydrarg.

During the last few days preceding this report, she became much improved; she had not any pain in her head, and scarcely any evening paroxysm; her voice was strong; her pulse acquired a firmness not for a long time felt; and she slept all the night (a thing quite

unusual) ; she had not yet recovered perfectly the use of her left arm, but her appetite and strength were so far improved that it was probable she should be able to get up in two or three days. On the next day she was removed from my care. I afterwards learned from the nurse that she got up after the lapse of a few days, and that the menstrual discharge soon appeared. In two months afterwards she was so perfectly established in health as to be able to perform the laborious duties of a nurse in the same hospital during a second prevalence of Cholera at Enniscorthy.

The paralysis and other peculiar symptoms which rendered this case so tedious, appear referable to lesion of some part of the centre of the nervous system. The sensation of falling which she had resembles that experienced by a man whose case is detailed in Magendie's *Journal de Physiologie* (tome iv. p. 406) ; he imagined that he was turning round and round :—on examination after death extensive lesion of one of the peduncles of the cerebellum was observed.

Some patients are met with who do not bear even aqua calcis. An ounce or two of soda water poured on a teaspoonful or two of brandy or good whiskey, with a little sugar, is then frequently found a refreshing draught ; and sometimes, when all ordinary drinks have been in vain tried, this will remain on the stomach, and relieve the burning pain so often complained of.

Thirst is one of the most distressing sensations that patients complain of, and one of the most difficult for the physician to deal with. If it be indiscriminately satiated, the patient will be harrassed with vomiting,

and will be rendered worse: if, on the contrary, we deny drink, he will be reduced to such a state of desperation, that he will swallow any liquid he can get at. I knew a woman to drink more than half a pint of a mixture of the strongest mustard and water, though she knew it would have an emetic effect. The distress of mind occasioned by thirst exerts an injurious influence on patients so much greater than the gratification of it, even *ad libitum*, that we must alleviate it: and therefore how this may be effected with least injury to him becomes an important question. In general, cold water is both the most gratifying, and the least apt to excite vomiting. At Grangegorman-lane Hospital, cold drinks were at first carefully prohibited on the authority of the army surgeons in India, who considered them to be almost always fatal.* At length the mistake of forcing warm drinks upon them was discovered; a man was appointed to the daily occupation of procuring good spring water, and I am sure I state the experience of all who were medical officers of the establishment, in saying, that it not only did not prove fatal in any form of the disease, but that, when sought for, it agreed better with them than any other drink. Cholera patients are great epicures in drink, and it is remarkable with what acuteness they distinguish the water of one spring from that of another, even when their tongue is cold and flabby. Soft or mawkish water occasions disgust and nausea in them; whereas good water sometimes stops vomiting, especially if it is that of a favourite

* Madras Rep. p. lxxv.

well, or if the patient is greatly delighted at getting it, as in the following case, which I copy from my note-book :

John Newport, a boy aged 15, was brought to hospital at three quarters past ten, A. M., in the second grade of collapse. Has had diarrhœa six days; last night it became worse: at six A. M. to-day vomiting commenced, and it recurred frequently since. Pulse 112, just perceptible. Tongue blueish, imprinted by the teeth.

Punch. Enema Plumbi Acet. Calom. gr. iv.

Three quarters past One, p. m.—Is in same state of collapse, vomits frequently, and has just now thrown up a large lumbricus; two stools; cramps in his legs and fingers.

Argenti nit. gr. iii. in aq. dist. ℥vi. Catap. Sinap. to the spine. If draught be rejected, to sip now and then aq. calcis with one-eighth of whiskey: no other drink.

Three quarters past Eight, p. m.—Not so well: collapse increased. The vomiting was somewhat abated by draught, but is now as frequent as before. Passed lately two gruelly stools.

Rep. haust. arg. nit. ac. enema Plumbi acet.

— *Ten, p. m.*—Punch. vesicat. epigast. calom. gr. xii. in dosibus vi.

Second day, quarter past Eleven, a. m.—Vomited a second lumbricus. Face and extremities very cold. Pulse 128, extremely small. Continues to throw up mouthfuls of fluid from his stomach.

Enema ex. ol. Tereb. ℥iij. ol. Oliv. ℥i. aq. Calidæ ℥ij.

This was ordered chiefly as a counter-stimulant, with the view of restraining the vomiting.

— *Three, p. m.*—Still throws up every sup he takes.

Rep. enema tereb. To take the aq. calcis as before.

— *Half-past four, p. m.*—Vomiting not so frequent. Three stools, consisting merely of the enema.

— *Three quarters past eight, p. m.*—Still throwing up. Dozing and becoming drowsy.

Magnesiae carb. 3ss. Abrad. capil.

— *Three quarters past eleven, p. m.*—Vomited five or six times since the draught of carb. of magnesia. Has been gradually sinking into greater collapse, now in third grade. Pulse cannot be counted at wrist. Is more drowsy.

Magnesiae carb. 3i. Vesicat. spinæ dorsi.

— *Midnight.*—The carbonate of magnesia was rejected as soon as swallowed, and several strains to vomit followed. Says he thinks there are worms in his neck, as he feels something sticking there.

Arg. nit. gr. v. in aq. dist. ʒviij.

Third day, eight a.m.—Continues to vomit. His thirst is extreme. Is very peevish and impatient. I gave him water slightly acidulated with sulphuric acid, but he would not drink it. He says he would rather have cold water than any thing else. He begs of me to pour water on his head, or to give him a cold bath.* I handed him a large vessel of water from his favourite spring, desiring him to drink as much as he pleased. He commenced as though he would have taken it all, but he was soon satisfied, and I left the vessel with him.

— *One p.m.*—Has taken only a pint and a half of water. Fell asleep almost immediately after the first drink, and slept a great deal since. Temperature of

* He afterwards acknowledged that he made this request in the expectation of being able to swallow part of the water.

skin much increased; pulse improved; voice much improved.

— *Quarter past seven p.m.*—Vomiting has ceased. Collapse disappearing. Pulse 120, sufficiently full and strong. Has fallen into the drowsy state which usually succeeds collapse.

Capiti applic. sinapisma ex pulv. sem. sinapeos nigrae parte una et pulv. sem. lini. usit. partibus sex.

Fourth day, half-past twelve p.m.—Much improved. Sleeps a good deal, but awakes spontaneously. No vomiting or purging. Tongue clean. Pulse still frequent.

Haust. eff. Enema tereb.

— *Ten p.m.*—Pulse weak and very soft. Very drowsy: coma threatened. One stool from the enema.

Sp. Æth. nitr. ʒii, decocti Hordei ʒvi, vini albi ʒii. M. Cap. ʒi, 2da quaque hora.

Fifth day.—Much improved. One thin yellow stool. No symptom of coma.

Sixth day.—Recovered. In this case the nitrate of silver did not appear to be of any material benefit. There was no evidence of the absorption of the calomel. Worms are so frequently met with in Cholera patients, that we must consider them, or the unhealthy condition of the alimentary canal, connected with invagination, to predispose to the disease; and there cannot be any doubt that in this case they contributed to the irritability of the stomach.

The most judicious manner for a patient to quench his thirst is to rinse his mouth with water every ten or twenty minutes, and to spit it out. This relieves thirst almost as well as if he swallowed it, and disturbance of the stomach is avoided by it. We cannot always pre-

vail upon patients to abstain from swallowing the water; some, who had been harassed by vomiting, and who were glad to compromise with it on any reasonable terms, I induced to adopt it, and they required no persuasion to continue the practice. Cold water, when desired, never injures: but I cannot make the same report of other appetites. Patients frequently crave buttermilk or acid beer with as much vehemence, and imagine that a drink of either would save their life; but these almost invariably injure, and if long continued, they become sensible of it themselves, and request a change. Mr. Annesley strongly recommends * drink acidulated with nitric acid: I think it deserves a trial. I endeavoured to make the subject of the last case drink water acidulated with sulphuric acid, considering it safer; but I could not prevail.

A few prefer warm drinks from the first; but even those who call for cold water for a day or two, in general become tired of it after that, and ask for something warm and nourishing. At this period they have a great sensation of weakness, and those drinks, if light, usually agree well, and tend to revive them. Coffee or tea, light bottled ale in small quantities, and soda water with wine or good whiskey, answer very well. Beer and porter never agree: they lie too heavy on the stomach, and sometimes I found them to occasion coma.

A sensation of weight or uneasiness at the *scrobiculus cordis* is a symptom almost invariably present. Frequently it amounts to pain, and is of so teasing and debilitating a nature, that some measure must be taken

* Sketches of the most prevalent Diseases of India, by James Annesley. Lond. 2d Ed. p. 174.

to alleviate it. The best I know of is the application of a mustard cataplasm to the spine or to the epigastrium. The *Sinapis nigra* is that which should be employed: the *S. alba* is almost useless for this purpose. The space of time it is to remain on must be regulated by the feelings of the patient. It must not be allowed to torture or fret him: on this hangs the character of a sinapism in this disease. When the patient has been previously made to expect some smarting, but at the same time relief from its application, he bears with it longer and with more good humour than he otherwise would.—Sinapisms should not be applied cold, as a chilliness and tremor are frequently occasioned by it.

Cramps sometimes commence in the first grade of collapse, but more frequently in the second. In this type the extremities are the parts chiefly attacked; the lower usually: when the upper are attacked, either primarily or subsequently, the case is generally a severe one. In the third grade of collapse, the muscles occupying the fossæ on either side of the spinous processes of the vertebræ are often affected. It seldom happens that cramps are altogether absent. When this does occur, it takes place in weak and debilitated persons, and it is a bad symptom, for it implies great atony: but I am not warranted in regarding it as so fatal a one as most writers represent. Mild cramps, not occurring early in collapse, and not frequently recurring, constitute the most favourable state. Violent paroxysms of cramps, frequently returning, are nearly, if not quite, as bad a symptom as their total absence, for they precipitate the patient into an alarming state of

collapse, and such cases generally run a rapidly fatal course. Their alleviation is therefore a matter of great moment. In a great majority of cases, a long, narrow, mustard cataplasm, applied to the spine, produces some relief. It is also proper to rub the cramped limb with a stimulating liniment: a mixture of mustard, oil of turpentine and of olives, answers very well. The good effects of this will be frustrated if it be continued so long as to annoy the patient. Inexperienced nurses should be directed not to rub the shins. It is useful to bandage with a flannel roller the limb still smeared with the liniment. When the hands and forearms are cold and wet, it is advantageous to bandage them in the same manner, even though they be not cramped: the patient in this state of collapse carelessly throws them about, and it is impossible to keep them covered otherwise. When cramps have continued violent after a trial of these means, I have resorted to the subnitrate of bismuth, or oxide of zinc. Opium will extinguish cramps to a certain extent: but really nothing is gained thereby, for the patient's life is generally extinguished also by it. Compression of the limb has been recommended. I have seen this diligently tried in various forms, but I never witnessed permanent benefit to result from it. At first the part is numbed by it, and the patient conceives himself much relieved; but he soon becomes tired of it, and ultimately it proves injurious, by suspending the circulation, which is already too feeble.

When Cholera is epidemic, the influence of the mind in producing it is very remarkable. It is frequently excited at once by certain mental emotions. One of the

most hideous cases I have seen was that of a watchman, who went in the evening to his duty in good health ; in the course of the night he got a beating, and the disease immediately set in ; early in the morning he was brought to hospital in the third grade of collapse, and he died soon after. In another instance a young woman in perfect health met a coffin unexpectedly : she was greatly frightened by it, felt weak, and purging immediately ensued. When I saw her she was in the second grade of collapse. The number of married women brought to Grangegorman-lane Hospital, in whom the disease was excited by their husbands beating them, is truly astonishing ; and I could not enumerate the instances wherein the attack was traceable to hearing of the death of a relative, &c.

The influence of the mind and of the disposition of the patient upon the progress of his case is not less remarkable. Irascible and cross persons become much more so when affected with Cholera : by their peevishness and fretfulness they work themselves into a desperate state of collapse ; attention paid to them, however great, does not please ; they are still dissatisfied, and they seldom recover. This so generally takes place, that in forming a prognosis we must always take into consideration the temper of the patient. Our only chance of success in these cases consists in humouring them as much as possible, and in allowing their passion to pass unnoticed.

One day, between eleven and noon, I was called to a woman about forty years of age, who was supposed to have Cholera. She said she took ill that morning at four o'clock with a cramp in the calf of her leg, and with

purging; and that she afterwards vomited a glass of brandy which she had taken, understanding that it was good for any thing resembling Cholera. Her pulse was sufficiently full, but had not a natural firmness; her skin was warm, but not of a clear colour; her eyes were red; and her countenance and manner partook of wildness. From the state of her pulse and skin, and from my having previously seen Cholera set in with a degree of mental derangement, I was satisfied that she had the disease; and I was proceeding to prescribe for her, when two other physicians entered the apartment. The conclusion they arrived at was, that she was tipsy, and had not Cholera. This unfortunately reached her ears; and being in middling circumstances, and of a very irascible temper, she received it with the utmost indignation, which occasioned some sharp rejoinders on both sides. A mustard emetic was now agreed to, under the impression that it was applicable to either case (that of whiskey, or cholera.) In half an hour afterwards the most sceptical could not question the existence of the disease; she passed a large serous stool like thin barley-water; and before five that evening she was pulseless, and in such a state that neither the physicians spoken of nor myself expected her recovery. She had a tedious illness, but was eventually restored to health.

Patients who entertain strong hopes of recovery do better than those who give themselves up: and so many facts have come before me, showing the good effects of holding out such a prospect to them, as long as there is a possibility of it, that I cannot hesitate to regard it as a valuable mean of postponing death. This

was early impressed on my mind by the following circumstance :—A woman in Grangegorman-lane Hospital, who was in an extreme state of collapse, asked me (as patients in that state usually do) “was there any hope of her?” I felt that I could not fairly hold out any, and I informed her accordingly. She appeared dismayed. A short time afterward she said to the superintending physician, who was looking at her, “I believe there is no hope of me.” He replied, “no such thing, there is no fear of you” (though I’m sure he entertained as little expectation of her recovery as I did). She believed him : from that period I could trace an improvement in her, and she ultimately recovered. However objectionable, on moral grounds, such practice might appear *a priori*, the result not only sanctions but demands it. Indeed I often thought that the superintending physician effected as much in very bad cases by cheering them up, as others did by medicine : he was most indefatigable in his attention to his patients, and often visited them several times during the night. I can scarcely be so far misunderstood as to be supposed to mean, that a person may be cured of Cholera by keeping up his spirits alone. I merely mean, that when, with all the aid of medicine which we can command, a patient is still in equilibrio between life and death, the influence of the mind will be often found sufficient to turn the balance ; and that this is not, therefore, a measure to be despised. When a patient is thus pending in the scale, I may mention (though to my brethren I’m sure it is superfluous) how large a call there is upon us for unremitting attention, and for every effort that we

can make in his behalf. When any practitioner has undertaken the charge of a person labouring under Cholera, he has commenced a serious and responsible duty; and really, whether he feels it or not, the patient has a claim, if not on him, at least on the character he assumes.

Of some Peculiarities met with in Cases of the Blue Type.

The foregoing remarks relate to the general treatment of cases of the blue type during collapse; but some peculiar symptoms are met with which require a separate consideration. One of these is very frequent vomiting. It is a general opinion that vomiting is a good symptom in Cholera. The truth of this varies with the state of collapse in which it occurs. In the first grade it is a bad symptom: it indicates that serous effusion into the stomach is taking place, that the patient is very liable to fall into a still greater degree of collapse, and that medicines swallowed will be attended with an uncertain effect. In the second and third grades, its total absence is a bad symptom, for it implies a dangerous state of nervous exhaustion or atony. From this latter circumstance, and from the occasional recovery of cases in which vomiting had been so obstinate that death was expected, some have concluded that this is a mean adopted by Nature for the patient's recovery; and therefore, that it ought not only not be interfered with, but to be even encouraged. Accordingly we have been recommended to give emetics to produce full vomiting, as it has been termed. Why should we

not also regard the dejections from the other extremity of the alimentary canal as a therapeutic mean of nature, and give purgatives to produce full purging? And why should we not regard the cramps in the same light, and endeavour to increase them? This doctrine is not sanctioned by either reason or experience. Whilst obstinate vomiting continues, the patient will not make any progress toward recovery. If he is taking stimulants, they must (as already mentioned) be laid aside. A sinapism should be applied to the spine or epigastrium, and this should be succeeded by a blister, if necessary. In the application of blisters to Cholera patients, the skin should be previously rubbed with tinct. canth., oil of turpentine, or with hot vinegar. Internal means must be at the same time resorted to. When the vomiting is attended with spasm and straining, I have found metallic astringents to be attended with most success. Of these I have most frequently used nitrate of silver. Immediately after vomiting, I have given from three to five grains dissolved in ℥vi or ℥viij of distilled water. It is seldom retained longer than a few minutes, and I have frequently had occasion to repeat it once or twice before the irritability of the stomach was removed. In a few instances the dose has been retained altogether, and in these its power of removing spasmodic action and the purging has been more remarkable. I have heard of ℥i of this salt having been given in ℥i of distilled water with advantage. I have not ventured upon so concentrated a form as that: but from a trial which I made of gr. v in ℥i of dist. water, I think that gr. iij in ℥vi will be found safer and

more effectual; and it is reasonable to expect more effect from a draught sufficiently large to come in contact with all the interior of the stomach.

Nitrate of silver fails in some cases: I have then resorted to subnitrate of bismuth, first recommended by Dr. Leo, or to oxide of zinc. Of the subnitrate of bismuth gr. vi may be given at first, and gr. iij every hour afterwards till the vomiting be checked, or till 3ss shall have been taken. I have seen it given in a great number of cases in gr. x doses until 3i had been taken, and I have tried it myself in the same quantity; but the practice is unsafe. In some who had taken it to this extent the pupils became contracted, and the limbs tremulous; they dozed almost constantly with their eyes open; there was sub-delirium, without pain in the head; and coma terminated their cases. Doctor Lefevre has justly cautioned us against too free a use of this medicine.*

When both nitrate of silver and subnitrate of bismuth have failed, I have sometimes found oxide of zinc to remove vomiting and cramps. It may be given in the same manner as subnitrate of bismuth, but we must be very cautious in extending the total quantity beyond 3ss.; for in one case wherein I did so, symptoms similar to those attending an over dose of the latter took place. My experience of it is very limited, for as I was treading unbeaten ground, I cautiously confined it to cases where other means had failed, or to utterly hopeless ones. I have found it of service in eight cases out

* Observations on Cholera Morbus as prevailing at St. Petersburg. Lond. 1831. p. 76.

of eleven. In the following the relief was rapid and striking.

Patrick Quin, a man thirty-four years of age, was brought to the Cholera Hospital at Enniscorthy, far advanced in the second grade of collapse. He had frequent vomiting and violent cramps. Seven hours afterwards he had lost ground, and was in the third grade: his tongue was cold, his skin cold and clammy, his pulse barely perceptible at the wrist; he was tossing himself about in great distress from the cramps, and the vomiting was unabated. He had up to this time taken calomel gr. xxiii, nitrate of silver, subnitrate of bismuth, and a few small doses of carb. of ammonia (it was laid aside in consequence of the vomiting). Sinapisms and frictions had been also resorted to. I now considered that there was but a slender hope of recovery. I gave him 3ss. of oxide of zinc in doses of three grains, and in eight hours he was relieved from the cramps and vomiting, and his pulse was decided at the wrist: his tongue soon after became warm, and his skin warm and dry. Recovery took place rapidly, and he left the hospital perfectly well on the seventh day from his admission.

The oxide of zinc appears to me to be a medicine of more power and certainty than the subnitrate of bismuth. These and the nitrate of silver distinctly manifest an astringent influence on the mucous membrane; and so are useful in diminishing purging as well as vomiting and cramps. In those who do not take any metallic preparation, the serous dejections are sometimes replaced by black slimy evacuations; but we must always expect black stools after the exhibition of the above and acetate of lead.

When vomiting is unattended with spasm, alkaline medicines are more frequently beneficial than those metallic preparations, especially when the discharge from the stomach is acid. *Potassæ causticæ aqua*, *magnesia*, and *aq. calcis* are the best.

One of the most remarkable peculiarities is the vomiting of a green fluid. The period at which this is generally met with is when the symptoms of collapse are beginning to give way to those of reaction, when the purging has in a great measure ceased, and before the ordinary vomiting has altogether subsided, the fluid thrown up gradually assuming a green tint. Sometimes vomiting has ceased for many hours before this green fluid shows itself, or it may not occur till the period of the consecutive fever. I have known it to usher in the disease, but in general it is a late symptom, not taking place usually till the second or third day. During the first month or two of the epidemic in Dublin, I did not see a case of it: the patients then ran their course either to death or recovery more rapidly than afterward; and those who recovered had less fever than I observed subsequently. Whether this was owing to any peculiarity of the epidemic at the time, or to fewer of the bad cases surviving collapse than subsequently under a more appropriate treatment, I cannot positively determine; but I am disposed to consider the latter the chief cause. The subjects of this green vomit are principally cases of severe collapse, but it sometimes occurs in mild cases of the blue type, or even in the spasmodic and febrile types. Previously to its accession, and during its continuance,

they complain of a burning pain at the scrobiculus cordis : some express themselves by saying “their heart is burning within them.” The fluid in passing the fauces occasions a burning or scalding sensation, and it leaves a sour taste on the mouth. When the fluid rests in a vessel, a green slimy sediment subsides, differing in colour only from that deposited by the ordinary Cholera evacuations, or from the slimy substance found to coat the mucous membrane after death ; and the supernatant fluid is of a clear blueish-green colour, somewhat between the tint of acetate of copper and a grass-green. It is always acid, sometimes as much so as the vinegar of commerce. The green colour is completely removed by an alkali. The colouring matter is thrown down by acetate of lead ; and the clear supernatant fluid yields with nitrate of silver a copious white precipitate, which becomes purple on exposure to light. If to a patient vomiting yellow bilious fluid an acid be given, the green vomit is produced ; and this change sometimes takes place spontaneously. In some M. Bouillaud found after death the green fluid in the stomach, and yellow bile in the small intestines. It is plain therefore that this fluid is bile rendered green by acid secreted by the stomach, and that the muriatic contributes largely to this. In these cases the burning pain and vomiting appear to be occasioned in the first instance, and to be kept up afterwards, by the presence of acid in the stomach : for upon neutralizing it, both are diminished or removed altogether. Each fit of retching forces a fresh quantity of bile from the duodenum into the stomach, and thus the basis of the green discharge is supplied. In the major-

rity of those who have been examined, the gall-bladder has been found to contain bile of a very dark green colour. Mere dilution of this bile, without the addition of acid, does not produce a bright, transparent, green fluid, like that which we see vomited up. The fluid resembling verdigris or green baize cloth, so obstinately vomited in the interesting cases of a peculiar erethism of the stomach with which Doctor Cheyne has favoured* the profession, has been considered by him as the product of this organ and not of the liver, because it was without bitterness; and, on examination of one case after death, the stomach contained green fluid, whilst the gall-bladder was full of dark bile. From the strong resemblance which this fluid bore to the green vomit, I cannot avoid hazarding the conjecture, that it was bile rendered green by acid. The presence of dark bile in the gall-bladder is not, obviously, inconsistent with this opinion, because on its reaching the stomach the green colour would have been added, and the bitter taste removed, by the acid which is mentioned to have therein existed in some of those cases. Further strength is added to this conjecture by the remark, that in one case the vomiting of green fluid supervened to vomiting of a yellow bitter fluid.

When the green vomit occurs in cases wherein collapse has been of the third grade, it may be regarded as a favourable symptom: it announces the restoration of the secretion of bile, and these cases, if they do not recover, at least hold out longer than we had previously

* Dub. Hosp. Reports, vol. iv. p. 252.

expected. But in milder cases, when there are good grounds for expecting recovery, it is to be regarded as an unfavourable symptom, for it renders them more tedious and complicated. Many writers on Cholera have noticed this affection; some have regarded it as a peculiar secretion from the stomach, others as vitiated bile: but I am not aware that any have insisted upon its real nature, or alluded to its proper treatment. The *potassæ caust. aq.*, *magnesia, aq. calcis*, or (if these be quickly rejected by the stomach) *sodæ carb. sic.* in pills, should be given every hour or two. Potassa and magnesia succeed best. When any of these has been given in sufficient quantity to neutralise the acid, the burning pain and vomiting are diminished, and the fluid thrown up is changed to a dirty yellowish-brown colour. If no other effect than the removal of the green colour were observed from the use of alkalies, this alone would justify their exhibition, for patients, on beholding the appearance of the fluid, are greatly alarmed, and consider their case as hopeless: and in vain do we endeavour to raise their spirits whilst they continue to throw up this (which Frank has justly compared to verdigris, and denominated acrid and almost corrosive,*) to the extent of perhaps a pint every hour. If the purging has ceased, as frequently is the case, we should open the bowels by mild enemata. The stools passed are green, yellow, or dark. If the vomiting does not soon subside, the application of a long narrow blister to the spine proves serviceable. I do not understand on what principle calo-

* De Curandis Hominum Morbis Epitome, tom. vii § 675.

mel has been given in this affection. Hiccough is often met with in these cases.

Vomiting of a yellow or a thin amber coloured fluid, generally attended with a bitter taste, is another symptom met with. This is diluted bile: and the exhibition of acids converts it into the green vomit. The cases in which this is commonly met with are those in whom collapse does not advance beyond the first grade, or the commencement of the second. The pulse is distinct, but rather weak; the tip of the nose and the ears are cold; the rest of the surface is cool, but not cold; there is scarcely any blueness, and the hands are not shrivelled; the eyes are somewhat sunk, but the voice is natural. These cases are subject to many changes. An attempt at reaction frequently appears to be made: the ears become red and warm; but the recurrence of vomiting throws them back into their former state; and at length they are so harassed that they sink into a greater degree of collapse, the skin becoming cold and clammy; or, after the lapse of two or three days' incessant vomiting, the stomach appears to be exhausted, vomiting ceases, the conjunctiva becomes injected, and the patient falls into a comatose fever. This sort of vomiting is not so unfavourable a symptom as that of serous fluid untinged with bile; I have, however, seen many die of it. The treatment I have found most successful is the exhibition of magnesia, aq. calcis, pot. caust. aq., emollient enemata (if required), and the application of sinapisms or blisters to the spine or epigastrium. I have often seen saline draughts with laudanum given to check this and other forms of vomiting, and I have tried them myself; but I

may now state, once for all, that if this or any other description of vomiting, in this type of the disease, be stopped by opium, the patient's chance of recovery is materially lessened thereby. Saline draughts alone may be given so long as the patient likes them, but I think they possess very little influence over this affection. We must be very cautious in applying leeches before the occurrence of reaction. I have tried dry cupping on the epigastrium a few times: I thought it useful; but it needs a further trial.

On the second, third, or fourth day of collapse (or even on the first in aged persons), when no amendment has taken place, it is not unusual for the patient to become extremely restless, and to complain of a severe pain in some part of the bowels. When this occurs, we may apprehend purging or vomiting of bloody fluid to ensue in the course of a few hours. The stools first discharged are like the washings of raw meat: if they do not advance beyond this state, a patient will now and then recover. But in general they become less fluid and more gelatinous (looking somewhat like raspberry jam diluted), so that they adhere to the bedpan, and, on close inspection, we discover membranous shreds, which, being examined under water, look extremely like portions of the villous coat of the intestine. I have not had an opportunity of examining the intestines in such a case, but I have long conjectured that these shreds were portions of the villous coat, detached by softening of the mucous membrane. The valuable pathological researches of M. Bouillaud render this extremely probable; but it requires further examination: however, they leave no

doubt as to the cause of the bloody stools, for when these had occurred, he found the mucous membrane softened, ecchymosed, and abraded, and in a state which he describes as ulcerated or gangrenous. I have not seen a patient recover who passed the latter sort of stool, or who vomited blood; nor do I know of any thing which is of any material use in this state. Of the means which I have tried, the *Ferri muriatis liq.* and *alumen* appeared to delay the fatal issue. The first must be given in small quantities, else the brain will be affected. Fomentations alleviate the pain in some measure. Anodyne enemata diminish the patient's sufferings still more, but they should not be given; I have oftener than once seen \mathfrak{z} i of laudanum in enema throw a patient into a sleep from which he never awoke. In smaller quantities it stupifies, and appears to hasten death. I do not recollect to have met with this sort of purging in infants or young children.

Patients sometimes complain of "a great lowness;" they cannot lie many minutes in the same position; they say, "their heart is ready to burst, and that they are going to die," and really their state appears to justify their apprehensions. Their countenance is expressive of great anxiety, and their pulse is very feeble, oppressed, and sometimes intermittent. The period at which these symptoms are met with is when an attempt toward reaction is made in bad cases, or in the progress of reaction afterwards. It is a common attendant upon the green vomit. I do not know any thing that affords so much of permanent relief as a blister to the spine. At the same time we must support the patient's strength with mulled wine, &c.

I have often seen patients brought to hospital in the following state:—they were unable to support their head, and it fell on their chest or shoulders; they were pulseless, or had a very feeble pulse; and sometimes the artery could be felt as full as usual, though there was only a trace of pulsation in it: their skin was of a dirty leaden hue, but not as cold, as wrinkled, nor as damp as in other cases of the same degree of collapse; their tongue was blue; and their eyes had an amaurotic appearance: when asked how they felt, they scarcely complained of any thing; they answered in a low squeaking voice, and begged in a peevish manner to be let alone, and to be allowed to go asleep. These symptoms took place quickly, in general within four or six hours; and without their having experienced as much thirst, vomiting, purging, or cramps, as other patients. However managed, they generally died. If let alone, they turned on their side, gathered themselves up, and fell into a doze: they asked a few times perhaps for a drink or for the bedpan; but they soon became comatose, and died quietly in the course of a few hours, without tracheal râle. By the inexperienced these cases have been regarded as less dangerous than others which were attended with greater sufferings.

Our only chance of saving such a case consists in shaving the head at once, applying a sinapism to it and to the spine, and giving stimulants internally. In shaving the head of a Cholera patient it should not be raised from the horizontal position. If he do not complain of the sinapism in a quarter of an hour, it should be replaced by one of mustard alone, with hot vinegar or oil

of turpentine. Opium in any shape must be avoided as poison. Stimulants I am induced to recommend from experience, notwithstanding the following assertion coming from such an authority as Professor Bouillaud : “ Je le dis avec la plus intime conviction, avec toute cette bonne foi sans laquelle on est à jamais indigne du nom de médecin, quiconque, dans l'état actuel de nos connoissances sur la nature du Cholera-Morbus, proposerait comme base principale du traitement de cette formidable maladie, les excitants et les toniques intérieurs, commettrait, pour me servir d'une expression de Bichat, le plus fatal contre-sens thérapeutique.”* If vomiting be produced by stimulants, it is a good symptom : nevertheless, if it continue, they must be diminished or laid aside altogether. If the patient do not complain of the sinapisms, we may soon expect death. In some of these cases I have given warm turpentine enemata, but I cannot say whether they were attended with any benefit. The same cerebral congestion, which dissection shows to exist in those cases during collapse, continues also in reaction ; the same drowsiness or subcoma also continues, or they are increased ; and according as reaction becomes established, coma sets in : the patient moans ; if a child, he grinds his teeth ; the pupils become dilated, the respiration slower, and he is in great danger of dying from coma. If he remain in collapse, he dies of coma also,—but much sooner. Our greatest success consists in anticipating coma. When therefore, the earliest symptoms of reaction occur,

* L. C. p. 299.

i. e. when the head and face become warm and dry, if we perceive coma threatened, we should apply a few leeches over the mastoid portion of the temporal bone, even though the hands be cold, and the pulse still undecided at the wrist. Three or four leeches on each side are in general sufficient at first, for the bites bleed freely, and the patient is easily thrown back into his former state of collapse. Our object is not to reduce the vigour of the circulation with the view of removing inflammation, which some will have to exist within the cranium. Our great enemy is coma, from a languid circulation and consequent accumulation of blood in the venous system of the brain and spinal chord, and the most advantageous ground we can meet him upon is a vigorous circulation. Whilst, therefore, we parry off the impending danger with leeches, we must guard against debility of the circulation, by giving camphor, ether, or carbonate of ammonia; and if the pulse become sufficiently firm to allow a few ounces of blood to be taken from the external jugular vein, we shall have but little to fear. The stomach at this period generally retains these medicines. Blisters are very useful.

Eliza Macbride, aged ten, was brought to the Enniscorthy Hospital, at half-past ten A.M., in the second grade of collapse. She took ill with vomiting and purging three or four hours previously, when getting up. Pulse 136, so indistinct at the wrist that it could scarcely be counted. Resp. 22. Skin sublivid; hands cold, blue, and slightly shrivelled; face and tongue warm; very little collapse of the features, merely a dimple under the

eyes, with a livid areola. When asked as to her feelings, she did not complain of any thing but a weight and impression across her chest. From the character of this case, especially from the rapid progress it had made, the relation of the respiration to the pulse, and the frequency of the latter, I noted it as a most unpromising one.

Punch. Plumbi acet. gr. x, in an enema. Calom. gr. iij.

— *noon*.—Vastly worse. Her voice, which before was not characteristic, now strongly so: the skin now cold, clammy, and of a leaden hue: the eyes half open: some stupor: two serous stools since administration of enema: vomited twice; 3iss. of fluid thrown up.

Enema to be repeated: head to be shaved, and covered with a sinapism.

— *three p.m.*—Still worse. Skin very clammy and very livid: sinapism not complained of, though repeated: no vomiting: two aqueous stools since administration of enema.

— *ten p.m.*—Died a few minutes before this in the most tranquil manner. About seven or eight p.m. the pulse returned to the wrist, but was very flabby.

Sarah Sheil, aged seventeen, was brought to hospital at two p.m. in an extreme state of collapse. She took ill on the preceding evening with diarrhœa, since which she passed ten or twelve stools, the last like whey: vomited twice or three times this day. There was no trace of a radial pulse; even at the bend of the arm, only with care could a faint pulsation be occasionally felt, though the pulse had been distinct at the wrist two hours previously (as Mr. Macartney, who diligently filled

the office of Medical Inspector of the district, informed me): her skin was livid and very cool, but not cold. She was in a very listless state: when asked whether she had pain, she referred some to the situation of the frontal sinuses: she did not feel sick, yet her countenance was expressive of anguish: she had not any noise in her ears; no out-passing of her voice through them; no upturning of the eyes; no cramps; very little thirst; and she appeared to wish for nothing but to be allowed to die quietly.

Two days only having intervened between the admission to hospital of this patient and the subject of the preceding case, I had an opportunity of comparing them in a more comprehensive and accurate manner than could be effected from any written descriptions of them; for, in Cholera patients especially, there are certain conditions of the skin, of the tongue, and of the pulse, certain expressions of the countenance, and a manner of the individual, which to an educated finger and eye are sufficiently intelligible, but which cannot be conveyed in words. I compared these two cases at the time, and considering them to be identical *q. p.*, I stated in my book that “I expect a similar termination.” As I concluded this note she vomited.

Enema Plumbi acet. ut antea. R. sp. ammon. arom. et liq. æth. ol., utriusque ʒss; aq. cinnam. ʒi, syr. Croci ʒi. M. pro haustu.

— *four p.m.*—Appearance improved: vomited shortly after the taking of the draught. Draught to be repeated.

— *half-past five p.m.*—Since last report she had one motion, the first since the injection of the enema. Did

not retain the draught longer than ten minutes. Much improved : face and hands warm : countenance placid.

Enema to be repeated. To have some mulled wine.

— *half-past seven p.m.*—Improvement in her appearance and feelings goes on : pulse now perceptible at the wrist : the paleness has left her lips. Vomited twice, but retained the wine half an hour : two stools, the first consisting of the enema ; the second of a semitransparent, glareous fluid, with flocculi, and of a gruelly consistence. This report was followed with the following remark :—“ I think it a just inference that stimulants have been of decided use here, for during the two hours previous to her admission she had been growing rapidly worse : farther than this I do not see the necessity of giving stimulants,—nay, I think they would prove injurious by keeping up vomiting ; but had she not gotten them thus far, I do not think she would be now in a recoverable state.”

Aq. calcis ℥j. ʒss subinde.

Second day.—She might now be considered out of danger. Her countenance was rubicund ; skin warm and firm ; pulse 92, small, not flabby ; resp. 23. Passed urine this morning, and two thin black stools.

Coffee. R. Plumbi acet. et calomelanos, utriusque, gr. iv, opii gr. ss. M. Fiant pilulæ duæ. Capiat unam statim, alteram, 2da hora postea.

Third day.—Convalescent. One black stool since last report.

To get broth, tea, and bread.

Sixth day.—Discharged from hospital.

The presence of noise in the ears, upturning of the eyes, thirst, cramps, and a feel of sickness or sinking, are bad symptoms, for they are connected with a serious

degree of collapse; but their absence in the state of collapse in which this patient was, is a much worse symptom; and appears to proceed from a numbed state of the nervous system, which, if not quickly removed, passes insensibly into death. In these cases the collapse of the features, the wrinkling of the skin of the hands, and the reduction of temperature, are not so great as in other cases accompanied with the same debility of the circulation. This is probably owing to their more rapid progress, and to the patient experiencing less suffering.

Four days after the death of E. Macbride (whose case has been lately detailed), her brother, John Macbride, aged eleven, was brought to hospital at half-past twelve, P. M. moribund. At seven that morning he complained of sickness, and the family, alarmed by it in consequence of the death of his sister, lost no time in giving him what they considered the best prophylactic against Cholera—a dose of castor oil. After this the disease set in with rapidity, and at his admission (i. e. in five hours and a half afterward) the collapse was of an extreme nature: no pulse could be felt at the wrist or bend of the arm, nor could it be counted even in the carotid; and his hands were shrivelled, and of an intense blueness.

I did not entertain any hope whatever of recovery: however I ordered his head to be shaved and covered with a sinapism, and m. viij of sp. ammon. arom. to be taken every half hour in a spoonful of aq. calcis.

— *quarter past two p. m.*—No vomiting or purging: sinapism not felt: comatose. Sinapism to be renewed.

— *quarter past four p. m.*—Continues to doze, seldom asking for a drink: sinapism not complained of:

pupils much contracted : the circulation appears wholly suspended in the small vessels, and those of the conjunctiva appear to be elevated above the surface.

The following enema to be injected. Ol. tereb. ℥ij. aq. ammon. carb. ℥ij, aq. font. ℥iv.

— *half-past five p. m.*—In the same state. Enema voided immediately after administration. Died at half-past six P. M.

It has so often occurred to me to find a similar course succeed to the exhibition of aperients, that I cannot hesitate to consider the dose given to this boy as mainly concerned in the rapidity of his case. It is not therefore without regret that I find Professor Lawrie, of the Glasgow University * recommending such treatment for the earliest symptoms of the disease : and if the publication of this case (or even of all these pages) shall serve no further end than the prevention of a repetition of this practice, my time shall not have been occupied, nor the attendant expenses incurred, in vain. I have noted that the pupils were contracted : this is not what we generally observe in these cases, except when opium has been given. I do not know whether it formed a part of the dose or not.

Maurice Courteney, aged seven, was brought to hospital at half-past ten, A.M. in an extreme state of collapse. He took ill with purging on the preceding evening ; and since four A.M. this day, his parents observed the change in his appearance. There was now no trace whatever of pulse at the wrist, but occasionally, with great care, an undulation could be felt in

* Essay on Cholera. Glasgow, 1832. p. 48.

the brachial artery. He was in a stupid, dozing state, sometimes yawning: his forehead was warm; his entire skin very blue; his tongue, very white, furred and dry; and his voice was characteristic, but not strikingly so.

Enema plumbi acet. (gr. x.) Calom. gr. iv. Aq. calcis with a small quantity of whiskey occasionally. Head to be shaved and covered with a sinapism.

— *half-past nine p. m.*—Passed this evening a dark fluid stool, the first since the administration of the enema. Has been vomiting frequently, and almost constantly dozing. No radial pulse.

The aq. calc. to be omitted. A blister to be applied to the epigast. To take calom. gr. ij. The following enema to be administered: ol. tereb. ℥j, ol. oliv. ℥ss, aq. calidæ ℥iv.

Second day, quarter past twelve p. m.—Comatose, yet considerably better: pulse perceptible at wrist, 120, small: vomits occasionally, and sometimes calls for the basin: asks frequently for drink: moans occasionally: passed a black stool without being sensible of it.

Calom. gr. ij. 3 horis ad dosem 3am. Inf. lini comp. for drink. Sinapism to feet: blister to spine.

— *half-past ten p. m.*—Not so well as at last report: pulse scarcely perceptible at wrist: hands and feet cold: throws up mouthfuls of fluid without calling for a basin: when roused, knows his parents, and calls for beer. Beer was given to satisfy the entreaties of his parents.

Third day.—Continues comatose: extremely restless: moans very much, and knits his brows. His hands are very cold, and the temperature of his entire skin is cooler than natural. Passed a great number of lumbrici with a dark stool.

Enema ex aq. calida.

Fourth day.—Continues comatose and moaning ; asks very seldom for drink : skin much warmer, rather warmer than natural : passed the enema without consciousness of it.

Eight leeches over the mastoid portion of the temporal bones. Enema to be repeated.

Fifth day.—Uninterruptedly moaning : sometimes raves : his eyelids are accurately closed, but when loudly called by his name he looks wildly around him for about a minute : does not ask for drink : extremities sometimes cold, at other times warm. Yesterday he passed water : in the evening his abdomen being tender and swelled, I had it stuped and leeches, and enemata of warm water given ; in the course of the night he was put into a warm bath, but all appeared useless. His respiration is now hurried, and expiration is accompanied with a moan : pulse scarcely perceptible at the wrist.

R. Mucilaginis Amyli ʒiij, tinct. opii ℥i. M. pro enema.

The patient died in six hours afterwards. An examination of this subject would have been most interesting. The leeches diminished the coma a little, but were not of any permanent benefit. The enema increased the coma : it was given to lessen the sufferings under which he appeared to labour, and to stop his incessant moaning, which had already injured other patients in the ward.

John Whelan, aged fourteen, was brought to hospital at four A.M. in an extreme state of collapse, with his head tossing upon his shoulders. At seven on the preceding evening he took ill with lightness in his head, purging and vomiting. He was now in a very listless state :

when asked, he said there was not any thing the matter with him; he was quite pulseless; his skin blue and cold; tongue cold; voice squeaking; eyes upturned; and he was without cramps.

Head to be shaved and covered with a sinapism. Sp. ammon. arom. m. x. in an ounce of aq. calcis, with a little syr. croci every hour.

— *three quarters past nine a. m.*—No vomiting: one small serous stool.

To take the draught every second hour. A sinapism to be applied to the spine.

— *half-past eleven a. m.*—Continues very cold and blue: his eyes are extremely heavy and death-like: a trace of radial pulse: passed another serous stool.

— *half-past one p. m.*—Passed a third serous stool.

Enema plumbi acet. (gr. x.)

Second day.—Continues in a comatose state. Pulse not perceptible at wrist: respiration natural: serous stools are passed.

Enema plumbi acet. (gr. xv). R. sp. am. arom. et liq. æth. ol. a. ℥i, aq. calcis ℥i, syr. croci ʒss. M. cap. 2da quaque hora.

Third day, ten a. m.—Still comatose: passes under him stools like beer: pulse perceptible at wrist: skin warm.

R. Mist. Camph. ʒvi, aq. chlorinii ʒi, M. cap. ʒi omni hora.

— *quarter past four p. m.*—Pulse 96, small and weak at the wrist: resp. 18: entire body warm, except the feet which are very cold: eyelids gaping: no purging. Cold water was now poured in a stream upon his head for about a minute.

— *eleven p. m.*—Since last report water was again poured on his head: his pulse was 100, and resp. 16, both before and after it. Now his pulse is 96, more developed, and resp. 16: there is much more reaction

than at last report: the skin is now naturally warm, except his feet; his eyelids are more closed, and he is not so comatose.

The affusion to be repeated.

Fifth day.—Much better: not absolutely comatose; stays awake for some time; countenance a little flushed; he still has a vacant look, the pupil not appearing distinctly defined: the eyelids are not closed during sleep: pulse 84, tolerably full, and nearly as strong as natural. Passed urine last night for first time: no stool since the third day, and then passed under him.

Affusion. Enema tereb. R. mist. camph. c. magn. ℥viij, sp. æth. nitr. ʒij. M. ℥i 3 hor.

Sixth day, half past four p. m. The affusion was performed to-day with some benefit: now awake, sighing, and saying “Oh dear!”—“wants his clothes to go home and sit by the fire:” respiration heavy, and appearing laboured.

Affusion and enema to be repeated.

— *three quarters past eight p. m.*—Has passed a large quantity of healthy fæces. Now in a comatose sleep: eyelids half closed.

— *three quarters past eleven p. m.*—Sleeping more heavily. Affusion now performed, and a blister applied to the nape of the neck.

Seventh day, eight a. m.—Pulse full, having an empty feel: he is very peevish, pulls his hand under the bed-clothes when I attempt to feel his pulse; and when they are drawn down, he looks up in a bewildered manner: hallucinates: respiration is frequently accompanied with a grunt: tongue dry, but not parched; no

sordes on the teeth : passes urine in small quantity : remains awake for fifteen or thirty minutes.

Eight leeches to the head. A saline draught every hour.

— *quarter past seven p. m.*—The coma and grunting have been decidedly diminished by the leeching. Pulse 74, rather flat under the finger, and slightly jerking; resp. 16.

Eighth day.—Not near so well; more comatose. Pulse 72, weak, empty and flabby: hands congested, of a deep crimson colour: tongue red in the centre; pale at the margin, owing to desquamation of the epithelium.

Saline draughts and wine.

Ninth day, noon.—He passed a natural stool last night, and another this morning. He is improved to-day: not so comatose.

Affusion. A saline draught with a table spoonful of wine every second hour.

— *eleven p. m.*—The stinking fever is commencing: his tongue is now glazed, and his breath very fetid. Pulse 92. Desires spring water.

R. Aq. font. ℥viij, aq. chlorinii ℥i. M. ℥i 3 hor.

Tenth day, ten a. m.—Pulse 76, much weaker, and not so full: some sordes on the teeth: tongue smooth, but not arid and glazed as at last report.

Two ounces of Sherry in a pint of barley-water for drink. To continue the aq. chlor.

— *six p. m.*—A quarter of an hour ago he passed a healthy and nearly configured stool in the sitting posture; and since that a great change for the worse has taken place; he appears very weak; his hands are cold and purplish; pulse very weak and empty; resp. labo-rious.

Ordered mulled wine.

— *half-past six p. m.*—He has fallen into a convulsive fit: his arms and hands are convulsed; his eyes rolling; mouth firmly closed; respiration stertorous and convulsive; countenance of a pale red colour.

Sinapism to head and spine. The following draught to be taken immediately: Sp. ammon. foet. et liq. æth. ol. a. \mathfrak{z} ss, decocti hordei \mathfrak{z} iss.

— *half-past seven p. m.*—Quite insensible; has had four convulsive fits. His hands are now warm, and his pulse tolerably good; resp. laborious and convulsive; pupils very much dilated, directed towards the right side, slightly affected by the candle. During the fits, the muscles (especially on the left side) were put into violent clonic action; the face was quite distorted, the mouth dragged open, and the pupils enormously dilated.

R. sp. ammon. foet. et liq. æth. ol. a. \mathfrak{z} i, decocti hordei \mathfrak{z} iv. M. \mathfrak{z} i o. h. R. ol. tereb. ol. oliv. et tinct. assæf. a. \mathfrak{z} i, decocti hordei \mathfrak{z} iv M. pro enem. stat. injiciendo.

Eleventh day, ten a. m.—Has just died. The same symptoms continued: the fits became less frequent and less violent, and the pupils remained dilated. From the state in which this patient was brought to hospital, I did not expect that reaction would take place: however he improved so much afterwards that at one period I entertained some hope of his recovery. The direction of a stream of cold water upon the head I tried with the view of inducing a contraction in the dilated vessels of the part, and of thereby diminishing coma. This end it undoubtedly attained to a certain extent; but whether it ultimately proved injurious, or whether death could have been averted by any means, I must leave to be determined by future observations.

The state of the circulation forbade general bleeding : had I resorted to leeches earlier, it would, I think, have been better ; but at the time, I considered it safer to postpone their application so long as improvement took place from affusion. In such cases I have often been desirous of some further means for restoring the patient.

Andrew Maher, seven years old, was brought to hospital at a quarter past eleven, A. M. in an extreme state of collapse. He was quite pulseless, and said he was not sick : his voice was husky and extremely low ; his tongue blue and cold ; face pallid and livid, with a black areola around his eyes, which were very much sunk ; skin very cold and livid ; some sores on his hands from scabies were of a deep blue colour ; and there was no upturning of the eyes.

Head to be shaved and covered with a sinapism. Plumbi acet. gr. viij. to be given in enema. Sp. Ammon. arom. m. v. in aq. calcis every half hour.

— *two p.m.*—At first he was in a dozing state, but this has gone off ; in other respects as before. Two serious stools : vomited three or four times.

Punch. Enema to be repeated. The draught every hour. A sinapism to epigastrium. \mathfrak{z} ss of aq. calcis occasionally as drink.

— *quarter past six p.m.*—He may be said to be better with certainty. Pulse can be counted at wrist, 132, extremely small : resp. 23 ; head warm ; the rest of the surface warmer than at his admission : does not sleep (which is a very good symptom) : one aqueous stool : vomited five times.

A sinapism to spine.

— *nine p.m.*—Improving : thirst increased (which is

a good symptom in this case, especially as it is attended with a diminution of collapse).

Spring water as drink. Sp. ammon. arom. and aq. calcis to be omitted.

Second day, half-past twelve a.m.—Appears much better: skin nearly of a natural temperature; head very warm; pulse more developed; now distinct at the wrist, 132; dozing: one black stool, thicker and adhering to the bedpan; vomited once.

Four leeches to the mastoid regions. Blisters afterward behind the ears. Calom. gr. viij in four doses; one every second hour.

— *seven a.m.*—Appears better. Pulse 140: tongue warmer and firmer: no stool: vomited five times.

— *eleven a.m.*—Still better: pulse firmer: no tendency to coma: vomited four times. A blister to be applied to epigastrium.

— *quarter past two p.m.*—Falling into the comatose fever which children usually have; pulls his hand peevishly under the bedclothes when I attempt to feel his pulse: lips now of a tolerably red colour. No vomiting.

Six leeches to the temples. R. mist. camph. c. magn. \mathfrak{z} v, sp. æth. nitr. \mathfrak{z} iij, syr. croci \mathfrak{z} v. M. \mathfrak{z} ss. 2 hor.

Third day.—Vastly improved. Yesterday evening he was quite comatose; to-day he is not so: remains awake for a quarter of an hour, smiles, and asks questions. Pulse 120. No vomiting; no dejection. Passed urine yesterday evening for first time.

R. Rhei et magn. carb. a. gr. viij, syr. zing. \mathfrak{z} i, aq. cinnam. \mathfrak{z} vi, tinct. rhei \mathfrak{z} ij. M. pro haustu. Mixture to be omitted for a few hours.

Fourth day.—Two yellowish, semi-feculent stools: abdomen doughy and tumid (in consequence of which two enemata were given): tongue quite clean.

Wine. Mixture to be omitted.

Sixth day.—Improving gradually, but slowly. His bowels, being torpid, have been kept free by enemata. Some fever of a low asthenic character. A little appetite.

Light nutriment. Beer. Quin. sulph. gr. i, twice a day; rhei. gr. iv at night.

Eleventh day.—Discharged well. This case was much more fortunate than I had expected. I was at the time much impressed with the value of the sinapism to the head, and of the early application of leeches afterwards.

Total absence of thirst is a very rare occurrence, and a bad symptom. In the cases wherein I met it there was also absence of vomiting. The following exemplifies this peculiarity:—Mary Blake, aged forty-five, took ill at ten A.M., with purging and cramps, and was admitted to hospital at five P.M. No pulsation could be then felt, even at the bend of the arm, and her tongue was cold and blue. From the commencement, she drank only two cups of tea; she did not experience thirst, nor had she vomited. She lived till half-past six P.M. the next day: in the interval she passed but one stool, and did not vomit, or evince any desire for drink.

Patients sometimes complain very much of a stitch in either side, or hypochondrium. This attacks them suddenly: it impedes respiration, occasions great distress, and must be regarded as an alarming symptom. The application of a sinapism to the spine, or to the part, obtains more relief than any thing else I know of. Sometimes magnesia in an aromatic draught has appeared of service.

If the blue type of the disease be complicated with

pregnancy, the chance of the patient's recovery is considerably diminished. When a pregnant patient is in the third grade of collapse, the placental circulation ceases, and the foetus dies. In general a few slight pains follow, and the foetus is expelled, frequently with its secundines entire. In these cases no obstetric interference is required: no flooding takes place. The facility with which the ovum is expelled is remarkable; and this, without doubt, is owing to relaxation induced by the evacuations and great debility of the patient, rather than to strong uterine action. In other cases, though the foetus die, it is retained for some time, in some instances for many weeks after the patient's recovery. The following case may not, perhaps, be uninteresting:—

Mary Edwards, a soldier's wife, was admitted on the 12th of September, 1832, from one of the barracks in this city into the Grangegorman-lane Cholera Hospital, in the second grade of collapse. On the eighth day she was convalescent, and got up: that evening she experienced some slight pains in her back; and early the next morning, having occasion to go to stool, an ovum of about the fourth month dropped from her, to her great surprise. Some hæmorrhage ensued. At first I resorted to aspersion with cold water, and friction of the abdominal parietes upon the uterus: but this proving of no use, I introduced two fingers into the uterus with the view of stimulating it, when I found that it contained another foetus. I now withdrew my hand, plugged the vagina, and ordered her the *inf. rosæ acidum*, with a further addition of acid. The plugging was removed in about twelve hours, some coagulated blood came

away, and there was no return of hæmorrhage, nor any attempt to throw off the second ovum. She left the hospital in about ten days, but was readmitted some weeks afterward, under the care of another physician, for some febrile complaint. The nurse in attendance upon this woman when under my care had an opportunity of seeing her twice since; and she informed me that in November, 1832, she could just notice her to be pregnant, which occasioned her to joke with her upon the subject; and that in the following January she was quite large. I know nothing farther of her.

Lactation appears to render females more liable to Cholera, and it certainly renders their case more aggravated, through the debility previously induced. That of milk is the last secretion to disappear, and the first to return. Is this to be explained solely by the less complicated structure of the gland? or also by the source of its nervous supply? Infants on the breast may be allowed to remain with the parent, except she be in the third grade of collapse, or approaching it. I never found the disease to appear in the infant under such circumstances.

When an infant is seized with Cholera, it is generally in the blue type the disease manifests itself. There is less purging and vomiting than in adults; the infant in a few hours becomes pulseless and comatose, and generally dies convulsed in the course of twenty-four or forty-eight hours. The lips and extremities of the fingers alone exhibit a blue colour, in consequence of the subcutaneous fat.

Also in young children and in aged persons the dis-

ease runs a much more fatal course than in adults. Persons above the age of sixty sink very rapidly into the third grade of collapse, and they can seldom be rescued from it. Of eleven such cases treated by me at Enniscorthy only three recovered—one aged sixty-two, another seventy-three, and the third seventy-seven. Lunatics, especially cases of melancholia, are more prone to Cholera than others : the mortality is greater in them, and they sink more rapidly : I have seen some die in four hours. This will be found a very rare occurrence indeed amongst other persons, if the history of the case be accurately investigated.

Of other Treatment recommended during Collapse.

The reports of the Army Surgeons in India are extremely good and faithful, as far as they relate to the symptoms and history of this disease ; but on the subject of treatment they are so delusive that they should be unnoticed thereon, had they not been received as the model for our practice, and were they not still productive of much injury in this way. When we consider the number of practitioners that contributed to these reports, it is remarkable how nearly they coincide in their treatment :—indeed Mr. Corbyn's plan appears to have been a Pole-star to nearly all the others ; and they have almost with one voice proclaimed opium, venesection and calomel, as the grand means on which we are to place our confidence. These constitute the tripod on which the Indian practice rests : superadded, we have warm baths, vapour baths, purgatives, stimulants, cautery, blisters, and friction.

Mr. Orton directs us to begin our treatment with four grains of Indian or three of Turkey opium.* Another practitioner recommends a drachm of the tincture at first, and half a drachm every hour after.† A third, describing his practice, says, “sixty drops of laudanum, a drachm of vitriolic ether, or a desert spoonful of warm brandy, were poured into the stomach every ten or fifteen minutes, until diminution of spasm, retching, and anguish”‡ took place. A fourth recommends enemata, containing half an ounce of laudanum.§ And we find a fifth ordering half an ounce of laudanum in an enema, though the stomach of his patient retained four grains of extract of opium just before given: || he was so fortunate as to recover,—but we have no grounds for supposing that the enema was retained; probably it was voided in the warm bath into which he was put immediately after. Even an ounce and quarter of laudanum have been given in a single enema.¶ A few condemn opium in general terms; but it is only those monstrous doses they appear to mean, for Mr. Annesley (than whom no one speaks more strongly against it) commences his treatment with a dose of two grains.** On the whole, the inference we are to draw from the Indian practice is, that except we give opium in larger doses than usual, we only trifle with the disease. My experience of this medicine leads me to a diametrically opposite conclusion, viz. that a dose of opium, which might be taken with impunity by a person in health, will prove

* Essay on the Spasmodic Cholera of India. 2d ed. Lond. p. 304.

† Bombay Rep. pp. 31, 33.

‡ Bengal Rep. p. 202.

§ Madras Rep. p. 108.

|| Bombay Rep. p. 202.

¶ Madras Rep. p. 35.

** Sketches, &c., p. 157.

fatal in many of the bad cases; and that the more desperate the case is, the greater is the danger from opium. It may be asked then,—why has the mortality in India been only from six to thirty per cent., whilst the mortality in Ireland, even under a treatment without opium, has varied from thirty to forty per cent.? It is because there was a much less proportion of bad cases in India than in Ireland, which the Indian reports show. The authority of Sydenham has been appealed to in defence of the exhibition of opium: but it is very questionable whether he ever saw a case of Cholera such as we are now considering; for I cannot suppose that the husky voice, noise in the ears, and serous stools, with absence of urine, could have escaped the notice of a physician of his observation; or that he would have omitted to mention such characteristic symptoms, if they had existed. Even granting that he had seen such cases, his practice gives no countenance to the above; for he gave only from sixteen to twenty-five drops of his liquid laudanum, and he was very cautious in repeating it.

I occasioned the death of the first Cholera patient I prescribed for, a woman, thirty years of age, in the second grade of collapse, by the following draught:—*tinct. opii* ℥ij, *æth. sulph. et sp. ammon. arom.*, a. 3ss., *aq. menthæ pip.* ʒjss. A few hours after taking this she became comatose, having at the same time a tolerably good pulse. A patient does not pass immediately from collapse into coma with such a pulse, except when opium has been given. The following case occurred when I had more experience in the disease, and it made a strong impression upon me:—

A soldier's wife, aged thirty-eight years, was attacked

at one of the barracks in this city with purging of white aqueous fluid. Though she had five or six such stools a-day, she was able to continue at her usual business till the second evening, when she was seized with giddiness, vomiting, cramps, and an increase of purging. At seven the next morning the surgeon of the regiment ordered her eight grains of calomel, and four of opium, in four pills. She threw up one of them; I may therefore conclude that three grs. only of opium remained in the stomach. Soon afterward she was sent to the Grangegorman-lane Hospital, where she arrived at three-quarters past nine A.M., and he very properly transmitted with her a note of his treatment. However, before this reached the physician under whose care she was placed, he had given her a stimulant draught, with half a drachm of laudanum. At this time she had a good pulse at 112; she complained a little of cramps, but her skin was warm and dry; and, though really a case of the blue type, she had so little of the external appearances of it, that she was inadvertently carried to a ward allotted to febrile cases. At noon she was so altered that her recovery was not expected: she was consequently removed to the nearest ward for cases of collapse, and she thus fell into my hands. She was now distinctly narcotized, and was in the second grade of collapse: she was constantly dozing; her pupils were contracted, and her eyes sunk and upturned; her skin was blue, and her voice husky. I had a sinapism applied to the back of the neck; the head shaved; blisters applied to the temples, behind the ears, and to the back of the head; and I ordered *sp. ammon. arom. liq. æth. ol.*

and camphor. At four P.M. she was more comatose ; but in other respects she was improved : a certain degree of reaction had taken place ; her skin was very warm, dry, and without blueness ; the subcutaneous veins were turgid ; and the pulse was 94, the artery feeling full and tense ; while her languid, upturned eyes, and low voice formed an unusual contrast to those symptoms. Death now appeared inevitable under these circumstances ; and the degree of reaction that had taken place, together with the feel of the pulse, induced me to try whether any relief from the coma was to be obtained by venesection. I opened a vein, and before an ounce of blood was obtained, it appeared to be emptied, and the artery lost its tightness : the wound was therefore immediately closed. In the course of an hour the veins and artery resumed their former state, insomuch that I would have then tried venesection, only I had discovered that this was not a case for it. Coma increased gradually, the pulse became fuller, slower, and weaker, the surface became cool and clammy, and she died at a quarter before twelve, on the sixth day of her illness.

Opium appears to be indicated, as Sydenham has said, by three of the symptoms of Cholera ; namely, purging, vomiting and cramps ; and these so constantly suggest it, that, though my faith in it was broken at the commencement, I afterwards discovered myself to be relapsing into its use. From all that I have seen of the disease, I feel satisfied that I would have occasioned death in the following case by an anodyne enema, had not the first appearance of coma been promptly met.

A man, aged twenty-six, was brought to the Cholera hospital at Enniscorthy in the second grade of collapse. He was convalescent in three or four days, and ate immoderately of cakes brought to him by his friends, which he concealed in his bed. This was followed by a relapse; and he was now, as is usually the case, much worse than before. He was pulseless at the wrist, his skin was almost black, and his features greatly shrunk: from these symptoms, connected with his most impatient and peevish disposition, I entertained no hope of his recovery. He did, however, recover from this state: and when nearly convalescent, being attacked with pain in his bowels and diarrhœa, I gave him, in consequence of his temper, one drachm of laudanum in a starch enema. Three hours afterward I observed him sleeping heavily; and on examining him I found that he was becoming comatose. Immediately I had sinapisms applied to his legs and nape of the neck and his head shaved. Leeches and blisters were then resorted to. By these means immediate danger was averted; but he fell into a low comatose fever, which I thought would prove fatal. His state on the ninth day from the commencement was as follows: he was very heavy, and almost constantly asleep; he raved occasionally at night; when roused, he answered very languidly to questions; his pulse was 70, full, tolerably strong; his head was of a natural heat, but his feet were cold, notwithstanding the constant application of warmth and other means; his tongue was dry, brownish-red, and flabby, having a temperature of 86° F. Cold water was now (11 A.M.) poured on his head from a height of three feet.

— *one p. m.*—His eyes were now more sprightly ; pulse 72 ; temp. of tongue 87° ; and his feet warmer. Affusion to be repeated.

— *half-past two p. m.*—Pulse 76. Next day he was distinctly less comatose. The affusion was repeated a few times farther ; his pulse became still more frequent, but weaker (in consequence of which mist. camp. c. magn. was ordered) : and by this, withre-shaving of the head, the re-application of a few leeches, and terebinthinate enemata, the feet became naturally warm, and every trace of coma was removed on the thirteenth day. The cold affusion I consider to have been mainly concerned in his recovery.

We now come to an important question, viz. : Is opium at all useful in bad cases ? I answer in the negative : not that it is inert, but (as Mr. M'Coy of this city, in his graphic report* says,) because it is “fearfully the reverse.” The practitioner who recommends it, I would ask in what manner it manifests its utility. Is it as a specific ? or by removing purging, vomiting and cramps, and by procuring rest ? If as a specific, I confess myself ignorant of the mode of employing it in this way ; but if in removing purging, &c. I must take the liberty of stating that I never saw it thus employed without danger to the patient, and that whoever uses it will have an awful list of deaths to report. I wish particularly to be understood as meaning that opium, *in any quantity, however small*, is in bad cases of this type productive of injury proportioned to the dose, because

* Dub. Journal of Med. &c. vols. ii. iii.

its effects are delusive ; and I know its injurious consequences have been by many overlooked, and that it has in this manner added to the mortality of the disease. When even a small dose, (e. g. four or five minims of the tincture) is given every second or third hour, we are informed by the nurse at our next visit, that the patient has been more tranquil, and not so often troubled by purging, vomiting, or cramps ; the patient himself, on being asked, confirms this report, and says he is easier ; and we find his pulse fuller and his skin warmer. A practitioner unacquainted with the delusive nature of such symptoms in these cases considers the patient actually better, and is confirmed in the propriety of his practice, especially if the patient happens to recover : but in the course of forty-eight hours a pool of water is probably discovered under the bed, and if he be removed to a dry one, watery fluid streams from his bowels as he is carried across the room ; he falls into a perspiration, becomes comatose, and so dies. His death is then attributed to the malignity of the disease, and opium is again resorted to. A patient treated with opium may be singled out from amongst many others by his greater drowsiness and heaviness, by his contracted pupil, and by his pulse being fuller and his skin warmer than in cases similar in other respects. The tincture has been preferred by some on the ground of its possessing a stimulating power ; but it has no claim to this character in Cholera, even in small doses : on the contrary, it has a greater tendency to prevent reaction, and to occasion a fatal issue, than solid opium ; because it affects the system with more certainty and quickness, in consequence of its fluid form. Of all preparations of opium,

Dover's Powder is the most pernicious in this type: it throws the patient, no doubt, into a perspiration; but from that moment he begins to sink. It should never be thought of when there is collapse or a tendency to it. Many will probably say that they have treated cases with opium, and have had as much success as others. I do not question this: but it is not the mode of deciding the point. Let a sufficient number of cases of the second and third grades of collapse be treated in any manner with opium, and let as many similar cases, occurring at the same time and in the same place, be treated in the same manner, but without opium;—the results will then speak for themselves. I have entered largely into the merits of this medicine, for as it has been employed in the treatment of Cholera more extensively than any other, it is proper that its character should be determined; and I hope it shall never again fall to the lot of any person to have so extensive a field for witnessing its bad effects as I have had.

Venesection is a remedy the merits of which are more easily settled than those of the last, for its effects are perceived at the time of its being employed, and are generally of so obviously injurious a nature, that it is difficult to conceive how they could be overlooked. The Army Surgeons in India have almost universally reported the existence of inflammation, and have thence concluded that bleeding *must* be necessary: and more recently, M. Bouillaud has stated the serous discharge to be in Cholera, what the effusion is in pleuritis. It might with more correctness be compared to idiopathic hydrothorax, to ascites from scirrhus liver or diseased heart, or to the effusions which occur in the last mo-

ments of life; but it is very different both in its chemical and pathological characters, from a product of inflammation. It is not therefore extraordinary that those views should have led to the trial of venesection and regiments of leeches; but that these means should be persisted in is surprising; and it furnishes a good example of the immense sway which preconceived opinions exercise over practice, and of the great importance of correct pathological information.

The manner in which bloodletting has been recommended would lead us to suppose that it was almost, if not altogether, indispensable. Mr. Christie says, "The pathological cause of the disease being an inflammation of the gastro-enteric mucous membrane, the bleeding will remove this inflammation in the same way as it removes that of any other texture; and the cause being removed, of course all the symptoms will disappear."* Mr. Annesley writes, "Bleeding therefore, when it can be effected, should never be lost sight of;" and again, "although I recommend bleeding at all times and in every stage of the disease, I am fully aware that many cases have recovered where it has not been used at all; nor do I answer for its universal success; but I do venture to assert, that if it can be accomplished in the early stage of the disease, and before the circulation has ceased at the wrist, in nine cases out of ten it will prove successful, especially if the colour of the blood change from black to red, if the pulse get up, and the spasms be relieved." Another writer, speaking of the blue

* Observations on the Nature and Treatment of Cholera. By A. T. Christie, M. D. Edinb. 1828. p. 102.

type, says, "bloodletting should be performed the instant of the attack, or in as few minutes after as possible" "in every severe case of Cholera seen by the practitioner at the commencement of the disease, it should be resorted to"; and "the public should be warned of the universality of bloodletting at the onset:"* and again, p. 175, "the warm bath, bloodletting, and a large dose of calomel and laudanum are to be immediately prescribed." This is not the language of experience, and this practice carries with it such destruction (for opium exerts a much more powerful influence after bleeding) to those who may be made the victims of it, that I cannot omit to protest against it in the strongest terms. I do not doubt that Mr. Annesley found venesection useful in nine cases out of ten, when performed in the early stage; but if so, the majority of his patients were not cases of the blue type in *any* stage: they may have been blue, they may have even appeared pulseless, but they were cases of the spasmodic or febrile types. I speak positively on this subject, because I was myself led into the mistake of considering those spasmodic cases, in which venesection was beneficial, as cases of the blue type seen sufficiently early for performing it; but further experience showed me that they were of a different character.

From what I have seen I would say that no part of the treatment of this type admits of being reduced to so simple a rule as venesection: viz. it should not be performed prior to reaction, *howsoever early* the patient

* History of the Contagious Cholera. By J. Kennedy, Surgeon. Lond. 2d edit. pp. xvii. xviii.

may be seen, not even in the premonitory diarrhoea : nor should it be performed in reaction except under circumstances to be mentioned hereafter.

The application of two or three dozen of leeches to the abdomen has been recommended. Mr. Annesley, on this subject, says “ *When blood, however, cannot be drawn from the arm, and the spasms continue; when severe pain and burning heat are felt at the umbilicus and scrobiculus cordis, and are distressing; when the skin is cold, and deluged with cold clammy dew; and when there are oppression of the chest and difficulty of breathing; excessive * pain and confusion about the head, with great intolerance of light; no pulse, or a pulse scarcely to be felt; and a cadaverous smell from the body:—* twenty or thirty leeches should be applied immediately to the umbilicus and scrobiculus cordis.” I could not point out more distinctly, than by the passages in italics above, the state of the patient in which leeches should *not* be applied. I have frequently seen them applied in collapse with the view of removing the vomiting and pain at the pit of the stomach; I have tried them myself in the same sort of cases, and I am confident that they have been productive of injury, and that I have lost patients by it. At first I was deceived by their effects: they diminish the pain and vomiting, and the patient says he is easier; but a more profuse clammy sweat breaks out on him, he sinks into a still greater degree of collapse, and it is this—not any real amelioration of his state—that removes the symptoms for

* These symptoms are not found united with those in italics.

which they have been employed. General bleeding produces a similar effect: when a patient in the first grade of collapse, who has not yet experienced cramps, is bled from the arm, cramps and vomiting are produced, and he is reduced to the second or third grade; if we now bleed him still farther, the cramps and vomiting will be removed, and he will say he is easier—but the further progress of the case shows that he is in reality worse. When we consider how languid the capillary circulation in external parts is in blue cases, we are quite unprepared for the great debility that ensues from the application of leeches. Whether this is chiefly to be attributed to the quantity of blood abstracted, or to the annoyance, I do not attempt to decide.

Three circumstances have contributed to give calomel a very extensive employment in Cholera:—first, a presupposed necessity for its employment; second, its being of no injury in the majority of cases; third, the recovery of almost all who were affected by it, whilst none of those that died in collapse were salivated. Mr. Searle regards calomel almost as a specific, and recommends a scruple of it every hour in bad cases.* Doctor Ayre prefers † a grain every five minutes; and another writer, a scruple every half hour during collapse.‡ I have given it, in at least a thousand cases, in every dose from one grain to twenty; with stimulants, and without them; with opium, and without it; and the infer-

* Nature, Cause, and Treatment of Cholera. By C. Searle, Surgeon. Lond. 1830. pp. 103, 116.

† Report, &c. 8vo. Lond. 1833.

‡ Facts and Observations relative to Cholera. By J. P. Needham, Surgeon. Lond. 1833.

ence I draw from the results of these cases, and of others which I treated without mercury, is—that in the majority it had no effect whatever, and that those who evinced signs of its absorption, whether by soreness of the gums and ptyalism, Eczema mercuriale, or mercurial Erethism, were rendered materially worse. I have used the strongest mercurial ointment, alone and combined with camphor and mustard, till I tired both nurses and patients, but without being able to notice any effect. The great extent to which calomel may be given without producing any mercurial action upon the system has been noticed by many: and its advocates have supposed that it is really absorbed in these cases, and that it exerts an anti-cholera influence, though it does not manifest any of its ordinary effects. I believe the truth to be, that it is not absorbed in the majority of those cases: and this is easily accounted for by its insoluble nature, and the thick layer of slimy substance which separates it from the mucous membrane. In mild cases of the febrile and spasmodic types I found I could not venture far in its exhibition, as the system was as easily affected by it as on ordinary occasions, if not more so. I have no premises therefore for inferring that it was absorbed in cases where nothing farther than the recovery of the patient was observed; and the fact, that as many and as bad cases recovered without its exhibition, proves that, even if it were absorbed, it was of no use. Our next inquiry is—has it been productive of injury? In the majority of cases, I have no more ground for believing that it has, than I have for supposing that it was of benefit: but in the rest it has been

unquestionably injurious. Having observed the first cases of recovery to be those who were affected by mercury, I erroneously attributed the removal of the disease to its influence; but subsequently, finding that those not affected by it had a much more rapid and less complicated convalescence, I never beheld a patient under its influence without reproaching myself for having given it so far: I gradually diminished the quantity till I omitted it altogether as a general practice, and I then regretted, and do still regret, that I ever thus used it. The evils attending it were these: convalescence was rendered more tedious and complicated, and the patient had more debility to contend with; sometimes bleeding from the gums and a troublesome ulceration of the mouth were produced; in two cases I saw gangrene of the cheek as a sequel—both terminated fatally; the consecutive fever was exasperated; much griping pain in the bowels was occasioned; and in one case (a patient of my own) along with a low fever, which proved fatal, inflammation of the parotid gland took place. Whether mercury does not dispose to the green vomit, to a low stinking fever (and therewith to ulceration of the cornea), I leave to others to decide. I have met with each of these, however, in patients to whom I did not give a particle of this mineral, and they have also occurred in persons not submitted to any treatment. In the course of recovery a few grains of a mild mercurial preparation place the patient more rapidly in the re-establishment of the secretions; but farther than this I consider the medicine to be either useless or injurious.

Purgatives and nauseating emetics are contra-indicated more than any other class of medicines : nevertheless they have been employed—even Croton oil and emetic tartar. The latter promises so much injury, that I should have supposed it had never been used in this type, only I find it recorded in the Madras Reports, p.213, that to a man with a quick faint pulse, and with great depression of the vital powers, twenty-one grains of emetic tartar were given in divided doses in the course of three hours. He vomited after each dose except the last, and died half an hour after taking this : yet, strange to be told, the surgeon doubted whether he had given a sufficient quantity. Some of the modes of treatment to which Cholera patients have been subjected (such as Croton oil, emetic tartar, hydrocyanic acid, burning the back with red hot irons, &c.) are so much more calculated to kill than to cure them, that they would appear to have been regarded as justifiable subjects for any experiment : and this has been carried to so great a length, that I cannot avoid saying, that those who come forward to recommend such measures, ought to take more pains to assure themselves of their safety and propriety, before they venture to set them afloat, and so multiply cruelty. I believe it is a prevalent opinion, that a severe case will always terminate fatally, if left to itself :—nor could any person, seeing a healthy individual reduced to a cadaverous state in the course of a few hours, well expect recovery, except through the interference of art. The powers of nature are, however, often sufficient to carry such a case through. I have seen patients in an extreme state of col-

lapse, cold, clammy and pulseless, recover without any treatment : and there is ground for believing that a spontaneous recovery from that state is not a rare occurrence. This should make us pause before we trifle with the life of a fellow-creature in resorting to measures which, if we have not in vain learned first principles, are calculated to do more harm than good. The first case of spontaneous recovery that I recollect to have seen was that of a lunatic, named Magee, sent from the House of Industry to Grangegorman-lane Hospital. He came under my care in a pulseless state, and would neither speak nor take medicine. I am indebted to Mr. Wallace, Staff-Surgeon, of Tullamore, and to Mr. Sterling of the same town, for the following case : A man was seized with Cholera on horseback near Tullamore, and was obliged to dismount and lie in a ditch. He remained in this state three days, without any person to minister to his sufferings, and he was now pulseless and in such a state that no hope of recovery was entertained. Nevertheless, the Board of Health, being informed of his situation, humanely raised a temporary roof over him, supplied him with wine, and procured (with much difficulty) a boy to attend him. On the fifth day some symptoms of recovery appeared : he was subsequently removed to the Cholera Hospital of the town, and recovered. I saw him when convalescent, and he then bore in his countenance traces of the disease in a very severe form.

Stimulating emetics constitute a more plausible treatment. Mustard has been recommended by Mr. Searle and others. I was induced by the favourable accounts

of it to give it a trial. At first, I thought it was beneficial; for it often caused the pulse to return to the wrist, and increased the temperature of the surface; but I afterwards found that this was only the semblance of reaction, extorted from the system at the expense of an increase of collapse. An unpleasant train of symptoms frequently follow its use. The slimy substance covering the mucous membrane retains it like birdlime, and it thus keeps up an obstinate vomiting which often wears out the patient. It is also absorbed into the circulation, and occasions a comatose fever. I have distinctly smelled mustard from the sliced surface of the brain after death; and I have distinctly smelled it from blood, which I had occasion to draw in some cases of the spasmodic type, wherein vomiting had not been produced by it. In the operation of this emetic every exertion of the patient appears to be summoned; he starts up suddenly in bed; the contents of the stomach are forcibly ejected, frequently through the nares as well as the mouth, and he falls back in a powerless state. The greater the degree of collapse, the greater is the danger from its exhibition. It is a medicine I would recommend never to be given in the blue type: and, if I am wrong in this advice, I have really no room for excuse, for I have witnessed its effects many hundred times.

Warm baths, notwithstanding the numerous recommendations of them, have been at length found (as might be expected) so very injurious, that cold baths have been proposed in their place.

We have now reviewed the principal means to which

the management of this disease has been confided for the first fifteen years from its general outbreak in India; and, if a correct statement of their effects has been made above, we are warranted in inferring that, if they were omitted altogether, the patient would have fewer difficulties to encounter; and of course, that fewer deaths would then take place. Accordingly, some, finding that more patients recovered when left to themselves, than under the practice just spoken of, have recommended that plan under the name of "the cold water treatment." When this, which in truth is the absence of all treatment, had made a great noise, and was espoused by the laity as "the cure" so long sought for, two physicians solicited me to try it: I refused, alleging that I could not feel justified in thus abandoning a patient, whilst I was in possession of any means which promoted recovery. Shortly afterward I saw it tried, and it needs scarcely be said that it was soon given up. All the cases, however, did not terminate fatally, though pulseless. One of them was a woman about thirty or forty years of age, who had been twelve hours ill: she had no pulse at the wrist, there was only a trace of pulsation at the bend of the arm, and her skin was quite cold. On the third day, her skin was warm and she had a tolerably good pulse: on the fourth, the conjunctiva was injected, as in cases where stimulants were given: and on the sixth, she was in so feeble a state that it was necessary to give her wine. In a few days more she was perfectly recovered. The strongest argument that can be brought forward against this plan, is the number of cases in which it has been

adopted from necessity, with no other result than an increase of collapse; whilst recovery took place rapidly afterwards under treatment. The following may be mentioned as an example:—

Hanna Nowlan, aged twenty-four, was admitted to the Grangegorman-lane Hospital at eleven A.M. She was twenty-one hours ill with purging and vomiting; and from poverty, with the exception of one pint of buttermilk, she took nothing but cold water, of which (to use her own words) she “drank gallons.” She became gradually worse, and was now in the second grade of collapse: her tongue was cool; her skin cold, damp, and pale; and her pulse at 60, very weak and small. At five P.M. she was so much improved that the use of medicines was discontinued, and she was removed from the ward for cases of collapse; she got up the next day but one, and she left the hospital in two or three afterwards.

Dr. Stephens has recommended * in cases of collapse, *sodæ mur.* ℥i, *pot. chlorat.* or *pot. mur.* ʒss, in water every half hour. I have not tried it, nor am I aware of any facts which countenance the practice.

In well marked cases of the blue type the blood is found to be thicker and specifically heavier than in health, owing to the escape of a part of its aqueous portion, and, with it, of some of the salts and of the albumen of the serum. This spissitude must certainly furnish a mechanical obstacle to its circulation, the re-establishment of which would appear to go a great way

* Observations on the Blood. Lond. 1832. p. 462.

toward the cure of the disease: it has been therefore, ingeniously enough, supposed that the injection of water, containing the deficient albumen and salts, into the vascular system would set the patient to rights again. I think it would be of some use if we could keep it there:—but what will prevent its following the same route which the water, whose place it is intended to supply, took? Unless we first staunch the leaky condition of the intestinal mucous membrane, we will profit no more than the Danaides; and when this is accomplished, the state of the patient is so much bettered, that I believe few considerate physicians will regard it as a sufficiently safe operation to be then resorted to.

Inhalation of oxygen gas has been proposed on obvious grounds, and cases have been recorded* in its support. I endeavoured to make two patients inhale it, who were pulseless at the bend of the arm, but in vain: when they had made two or three inspirations, they became unable to close their lips on the tube from debility. They both recovered. Inhalations of this or any other gas is therefore, in those cases where we stand most in need of remedial agents, impracticable, unless the patient be placed in an atmosphere of it. Enemata of oxygen have been also recommended.†

Cases have been related ‡ in favour of tobacco ene-

* Cholera as it appeared in Sunderland. By W. Hazlewood, M. D. and W. Mordey, Surgeon. Lond. 1832. p. 101.

† Observations on the Pestilential Cholera, by W. Ainsworth, Esq. M. R. C. S. L. Lond. 1832, p. 154.

‡ Cholera, as it appeared at Newcastle and Gateshead. By T. M. Greenhow, M. R. C. S. L. Lond. 1832. p. 141, &c.

mata : but I hope that no practitioner will employ them without seriously considering the effects to be expected from this medicine.

Treatment in Reaction.

The first symptom of reaction that we can confide in, is the skin becoming dryer. We must be still watchful that the patient shall not fall back into collapse ; and to prevent this it is sometimes necessary to give camphor, sp. æth. nitr. or sp. am. arom. But the chief danger we have to guard against is coma ; and the more severe and protracted the case has been, the greater is the tendency to it. If he sleep for some hours without awaking, we should not hesitate to arouse him, that we may be satisfied of his state : and though he should answer our questions distinctly, if he drop off immediately into sleep, we have reason to be alarmed. Shaving the head, venesection when the state of the patient admits of it, and the application of leeches, sinapisms, and blisters, are the means I have found most efficacious in removing coma. Blisters are so valuable that they can seldom be dispensed with. Applied to the temples and forehead, they are more serviceable than behind the ears, or to the back of the head or neck, even though they should vesicate equally well in the latter situations. This is contrary to what we might be led to expect, for the cerebellum and medulla oblongata appear to be more implicated than the cerebrum. Is it to be explained by the different sources from which these parts derive their nerves ? The number of leeches applied

should be few at first. I am not to be understood as recommending them in all cases where there is drowsiness and a flushed face, but only where coma is threatened in conjunction with symptoms of accumulation of blood in the brain ; and in these the improvement exceeds what we could expect. When the pulse is firm, the skin dry, the hands warm, and when the veins swell on the application of a bandage, I know of no remedy which removes coma so effectually as venesection. I have seen patients, who were so comatose that they were scarcely aware of the operation, open their eyes when a few ounces had been drawn, and begin to converse ; they looked more cheerful ; and when questioned as to their feelings, they said they were lighter, and that they felt relief from a “load and impression on their heart.”

It is not a matter of indifference how venesection is performed ; and the practitioner that would employ it to advantage in these cases must be present himself, and keep his finger on the artery during the flow of the blood. He cannot be certain that it would be proper in an hour hence ; nor can he predict how far it should be carried. The operation should be announced to the patient in the mildest manner, he should be informed of the benefits likely to result from it, and he should not be permitted to sit up. Every thing, in short, which can contribute to quietness and to the prevention of alarm should be adopted. I have more than once found the abrupt announcement of the operation produce so great a change in the patient as to require its postponement ; and I have seen so trivial a circumstance, as the

spilling of part of the blood in the bed, make an impression which rendered the immediate tying up of the arm necessary. It may to many appear strange, that, if the operation were called for, such trifles could render its success doubtful, and that in the space of an hour it might again be indicated, or that the opportunity for performing it might pass off altogether. I merely state what came before me as fact, without attempting to account for it; but I think it useful to bear in recollection the great influence of the mind in this disease, and that our object in performing venesection, is not to diminish the quantity of the blood or the force of its circulation, but to relieve the venous system which appears to be surcharged and distended, and to make such an impression as will cause it to contract to its diminished contents. Hence it is proper to prepare the patient for the operation by giving some agreeable stimulant, as mulled wine, &c. When the vein is opened, if the blood come freely, its flow must be moderated at first, as the heart in these cases does not bear to be thus taken by surprise. At first generally the blood trickles down the arm in a dark brown stream; it then becomes streaked with red in the centre, and presently the orifice in the vein contracts, the velocity of the stream is increased, and it spouts in a uniformly red jet to the distance of some inches: at the same time the pulse loses its sluggish, laboured feel, and the arterial stream strikes the finger with more energy. Our object is now attained: the further abstraction of blood would prove useless, and if carried so far as to produce debility would even frustrate our intentions.

Other indications for general blood-letting are a sen-

sation of oppression or tightness at the præcordia, delirium, pain in the bowels or head, restlessness, and fever, with a dry, brown tongue, an angry pulse, thirst, and confined bowels. The following case may here be mentioned :—

Patrick Connors, a strong man, aged thirty-two, was admitted to the Enniscorthy Cholera Hospital in the third grade of collapse, at three p. m. of the fourth day of his illness. On the first day, he was attacked with purging: on the second, he took a dose of Epsom salt, and continued at his usual employment. On the third he was worse; and on the fourth, the symptoms having become much more severe, he was conveyed a distance of twelve miles to the hospital. At his admission, he was extremely cold and blue; his hands were shrivelled; his pulse just perceptible at the wrist, 124; and he was tortured with cramps.

Punch. Ammon. carb. gr. v. in an ounce of aq. calc. with syring. every hour.

— *half-past seven p. m.*—One serous stool: vomited twice: pulse 112: thirst excessive: voice weaker.

— *half-past ten p. m.*—In great distress; tossing himself about, and complaining bitterly of cramps in the calf of his legs; begs of me to bleed him; during last two hours vomited four or five times, and threw up forcibly about a quart of fluid each time; his tongue feels remarkably cold to the finger, his hands and arms are of a death-like coldness, and his voice is extremely husky and low; a little upturning of the eyes; no noise in the ears.

Sinapism to spine. Head to be shaved and covered with a sinapism. Argenti nit. gr. iij. in aq. dist. ℥vj.

— *half-past eleven p. m.*—Feels better : cramps relieved : retained the draught twenty minutes, and vomited once since that : another serous stool.

Arg. nitr. gr. iv. in aq. dist. ℥ viij. Enema plumbi acet.

Fifth day, one a. m.—Feels much better : not so thirsty ; pulse much improved ; hands not so cold. The draught was almost immediately rejected.

— *quarter past eight a. m.*—At two o'clock this morning a sinapism was applied to the epigastrium, and a blister at three. He is now much better : countenance much improved, not blue ; the blueness and shrivelled state of the hands are nearly removed ; tongue warm and clean ; voice not near so husky ; pulse 100, improved in strength, though still weak and small.

— *three quarters past eleven a. m.*—Had just now a severe fit of hiccough : it ceased upon his throwing up some tea which he had taken.

— *three quarters past five p. m.*—Had a few attacks of hiccough since, for short periods : slept a little, starting frequently : some thirst still.

Sixth day, half-past twelve a. m.—Drowsy, and sleeping a good deal ; face flushed and warm ; nose red ; tongue redder than natural, having a moist granular surface ; pulse 92, fuller than natural, and searching, but not hard ; no trace of shrivelling of the hands. Eight ounces of blood were now taken from the arm. At first it flowed in a languid stream of a dark brown colour, it then became brighter, flowed briskly, and had a temp. of 95°. Half an hour afterward he complained of a "burning pain in his heart," which extended from the scrob. cord. along the course of the œsophagus, and

he threw up some acid fluid. This appears to have been occasioned by beer taken at the time of the venesection, and which he had much desired. It was removed by pot. caust. aq.

— *half-past seven a.m.*—Feels much better, and appears quite natural, with the exception of his face being a little flushed. Pulse 84. Has not yet passed urine, nor any thing from his bowels, since the administration of the enema.

The following enema to be injected: Ol. Ricini et ol. oliv. a. ℥i, aq. calidæ ℥xij.

— *half-past two p.m.*—At eight A. M. passed upwards of three pints of natural-looking urine. No stool.

Sodæ sulph. ℥i, ol. Oliv. ℥i, aq. calidæ ℥x, as an enema.

— *half-past nine p.m.*—No stool: some pain in chest: pulse 68, full, stronger than natural, jerking. Venesection was now repeated, and ℥x of blood allowed to flow: he felt great relief from it. To take a saline draught every hour.

Seventh day, half-past seven a. m.—Better. Passed three fluid, feculent, yellowish-brown stools. To take a saline draught occasionally.

Ninth day (the fifth of his stay in hospital).—Quite recovered: walking about: has a good appetite. When I first saw this patient, the vomiting and purging had nearly ceased, as generally occurs in the protracted state of collapse in which he was. Vomiting became frequent and forcible afterwards, under the use of carb. of ammon. This I hailed as a good omen, (not that the vomiting effected any benefit, but) because it showed that the system was roused into a more energetic state.

The continuance of vomiting would have proved very injurious, and on this account the arg. nitr. was ordered: if we had it not thus in our power to moderate vomiting, the exhibition of stimulants would be very hazardous. The head was shaved and a sinapism applied to it even before any appearance of coma, because in such cases as this it is always to be apprehended, and it is only by anticipation that it can be successfully met. Had venesection not been performed, he might nevertheless have recovered; but I am satisfied, from observation of a great number of cases, that his recovery would have been more tedious, more uncertain, and attended with more debility.

The menstrual discharge appeared during reaction in so great a proportion of females as to arrest my attention. On investigation, I found that it frequently anticipated the completion of its natural periodic time, and that it also appeared in some who had not seen it for some time previously in consequence of age. When thus abnormal, I did not hesitate to resort to venesection, if indicated; and it was attended with the best results.

Whilst such advantages may be derived from venesection, it is productive of equal injury when injudiciously resorted to. If the tongue be moist and clammy, or flabby; if the skin be moist, or (though warm and dry, yet) lax and of a dusky colour: if the cheeks be flabby and of a purplish red; if the veins do not swell, when the arm is bandaged, and have not an elastic feel; if the pulse be small and without firmness, or full and soft like a varicose vein; and above all, if the artery do

not feel cylindrical under the finger, but like a soft string,—the operation will prove injurious. And if, while the blood is flowing, it do not become brighter; if the velocity of the stream do not increase; if the pulse become fuller and softer, or flabby; if the temperature of the skin be lowered; if the countenance become anxious; if the patient feel weaker; if he complain of noise in his head; if after the operation vomiting or purging ensue; and if immediately he express a desire to fall asleep—it has either been improperly resorted to, or carried too far.

A middle-aged woman was brought to hospital in the third grade of collapse. On the second day re-action took place; and on the third day she was passing into a comatose fever, in consequence of which her head was shaved and blisters were applied to the nape of the neck and behind the ears. At three p. m. she was in the following state:—Her skin was warm and dry, but of a purplish red colour, and not naturally elastic; her eyes were very languid, and surrounded with an areola of the same appearance; her tongue was warm, moist, and covered with brown fur posteriorly; her pulse was 84, small, flabby, feeling like a soft string rather than a tube; and she answered questions steadily and rationally. At a consultation of three of the physicians of the hospital, venesection was advocated by two, and deprecated by the third. As a preparation she was given three ounces of punch. The external jugular vein was now opened, the blood flowed in a very dark stream without improving; and when ʒviii had been drawn, the wound was closed. The pulse was then of the same frequency,

fuller but weaker and more flabby: she said she felt lighter, but that she wished to go asleep. A similar quantity of punch was now given.

— *three quarters past three p. m.*—More drowsy: pulse scarcely perceptible. Ordered a stimulating draught every hour.

— *half-past four p. m.*—Pulse a little more developed, but still less firm than when venesection was performed: hands cool: resp. very slow: dozing very much, yet she says she is lighter.

— *ten p. m.*—The blister was now removed as it had operated: she appears less drowsy, and has been complaining of being tired and fatigued.

— *half-past ten p. m.*—In scratching her neck she opened the vein, and from four to six ounces of blood escaped. She now felt very weak, her skin became cold, and her pulse vanished from the wrist. At eight the next morning she had rallied so far that her pulse was perceptible, but she died that evening.

A man aged forty-five, in the second grade of collapse, and his wife, about fifteen years younger, in the first grade, were brought to hospital in the morning. A few hours afterward re-action took place in the woman: she was restless, and had a full jerking pulse; but on the whole she was so much improved, that no apprehensions for her could be now entertained. A physician who happened to see her at this time, conceived a strong desire to bleed her, especially as she was in the third or fourth month of pregnancy. Her attending physician considered that it would be a hazardous measure, and proposed its postponement, either till it

became more indicated, or till she should be better prepared for it. This was not acceded to, and ℥xiv of blood were drawn. At the tying up of her arm she became very sick, threw up a large quantity of the green acid fluid already described, purging ensued, and she began to sink rapidly into collapse. Cordials and pot. caust. aq. were given; but this vomiting continued, and she sank rapidly into the third grade, and every prospect of recovery was removed. After a trial of pot. caust. aq. the vomiting was checked by magnesia: abortion took place; but she eventually recovered. The restlessness in this case, observed prior to the bleeding, was occasioned by the presence of the green fluid in the stomach, and might have been removed by the appropriate means. Reaction was not sufficiently established when venesection was resorted to; and, by producing collapse, it occasioned abortion, instead of obviating it.

The application of a few leeches to the abdomen is sometimes required during reaction in consequence of pain, tenderness, or vomiting; but they should not be hastily resorted to: we should first try fomentations, emollient enemata (if the bowels be confined), and we should ascertain that the symptoms are not occasioned by a distended bladder. Authors have stated that at first high coloured urine is voided in small quantities. I cannot account for this mistake. On his first passing it, the patient generally voids one or more pints of clear urine. Sometimes before any urine is passed the bladder becomes greatly distended, and considerable distress is occasioned by it: the usual means afford relief.

When hiccough occurs it is generally at the approach of reaction, or during the consecutive fever: this circumstance, and its not portending the issue which has been generally found to follow it in some other diseases, is I suppose what has led authors, who have noticed the subject, to regard it as a favourable symptom. I cannot consider it as a favourable symptom; for if it be absent, the others remaining, the patient is in a better state. It harasses and debilitates so much that we must resort to measures for its removal: M. Bouillaud relies upon leeches, and Mr. M'Coy recommends sulphuric acid internally. I cannot recommend any particular treatment: sometimes it is occasioned by acid in the stomach, and then alkalies will remove it; at other times a blister to the spine, or emollient enemata, are serviceable; and I have also found it to subside after venesection.

Many writers have spoken of the occurrence of a copious perspiration in the consecutive fever; Dr. Keir* of Moscow considers it highly useful, and others regard it as a critical symptom. I have not found this to be the case. I have seldom seen perspiration, and then I always had reason to regard it as a bad symptom. The internal and external tegumentary membranes are in general similarly affected in this disease: in collapse, when the skin is wet or clammy, there is a discharge from the bowels also; and when perspiration occurred in the consecutive fever, I found it attended with a colliquative diarrhœa, or some other unpleasant state of the patient.

* Treatise on Cholera as it appeared at Moscow, 1832, p. 69.

A sudden change from the horizontal posture is very improper. If the patient have occasion to vomit or to discharge his bowels, he should not be allowed to sit up. Nurses unacquainted with its danger cannot be too strongly cautioned against it; and it is sometimes necessary to apprise the patients themselves of it, for even this in bad cases might cause death.

The bowels are apt to become confined at this period. They should be moved gently by enemata; but aperients by the mouth should not be resorted to without good grounds and much caution. Castor oil has been supposed peculiarly adapted for this state, yet it sometimes produces sad effects.

It is not unusual for pustules to form on the back of the hand, elbow, and other parts of the skin where the circulation was very languid during collapse. Patients in whom this occurs seldom die. I have sometimes seen an eruption general over the skin, as in the following case:—

Catherine Macbride, aged seventeen, was brought to hospital at four A. M. pulseless at the bend of the arm, and with a cold, livid-blue skin. Her tongue was cool, and covered with a blueish-white fur; her voice was characteristic; but she had not noise in her ears, nor were her hands shrivelled, which, in connexion with the foregoing, rendered the case more unpromising. She had been two or three days ill with diarrhœa, and during the last ten hours had serous purging and vomiting.

Punch. Enema Plumbi acet. Sinapism to spine.

— *half-past seven a. m.*—One serous stool: vomited

twice : desires a warm drink in lieu of water.—To get tea and gr. ij of calomel.

— *half-past ten a.m.*—Pulse just perceptible at the wrist : vomited four times : desires warm buttermilk.

— *four p.m.*—Another stool : still vomits : one eye closed ; the other half open : appearance improved.—The enema to be repeated.

Second day, two a.m.—Pulse 136 : resp. 22. Having prepared 280 c. i. of oxygen gas, I endeavoured to make her inhale it : but by the time she made two or three inspirations, she became so fatigued that she was unable to close her lips on the tube.

— *three a.m.*—Vomiting and thirst continue.—A blister to be applied to the epigast.

— *three p.m.*—Much improved : pulse 120, better, but still very weak : resp. 25 : lips now red : vomiting has ceased : after having refused water, and tried various other drinks, she has again returned to it, and says it answers her better than any other. A sensation of weakness referred to the præcordia is her chief complaint. At noon she took gr. iss of calomel and gr. ii of magnesia.

— *ten p.m.*—Another stool.

Enema plumbi acet. (gr. xv.) to be given.

Fourth day.—Reaction is fairly established. Pulse 104 : resp. 16 : face very much flushed ; conjunctiva very vascular ; some purulent discharge at the inner angles of the eyes : tongue dry : a little thirst : she is drowsy, and passed urine this morning for the first time.

Six leeches to the head. Saline draughts.

Fifth day.—Improving, but still feverish. No stool since the third day.

Enema ex ol Ric. ζ i, ol. Oliv. ζ ss, aq. Calidæ ζ viii.

Sixth day.—Last night, as the enema had not moved her bowels, it was repeated, with the addition of ζ ss of sulph. of soda: nor has this operated. She does not appear so well to-day; her tongue is arid, and a little glazed; her eyes are glassy, the conjunctiva much injected, and she has a strong tendency to the stinking fever.

Enema ex ol Ric., ol. Oliv., et ol. Tereb. a ζ ss, aq. calidæ lbj.

Seventh day.—Much better: less fever; tongue cleaning; pulse 100; passed two large, brown, feculent stools.—To get a little soup.

Ninth day.—She now feels quite well. Yesterday I first observed the commencement of an eruption: to-day the skin is spotted with red patches about the size of the section of a common pea, split. They are confluent on the face, discrete elsewhere, not elevated and slightly itchy. No stool since the seventh day. To get a rhubarb draught.—She left the hospital perfectly well a few days afterward.

A fever, as already mentioned, generally develops itself when reaction has taken place. It has been said to resemble typhus so strongly as not to be distinguishable from it; but it is of a very different character. The skin has not the mordent heat felt in typhus, and it is rather inelastic; there is seldom pain in the head; the patient has a great tendency to coma—and when he sleeps, the eye-lids are generally a little open; on his being roused, or during the night, he may occasionally

hallucinate, but there is rarely a state deserving the appellation of delirium; there are not usually exacerbations and remissions, nor subsultus, nor petechiæ; the pulse is not so quick and throbbing as in typhus, and convalescence takes place much more rapidly. I have certainly met with a few cases which resembled typhus, but these must be regarded as accidental exceptions. Dr. Brown, of Sunderland, is the only practitioner I am aware of having noticed the peculiar nature of this fever. I cannot, however, find grounds for following him in regarding the entire disease as a fever in its several stages, and in nominating it "cholera fever."* This view of it is ingenious, but, I apprehend, fanciful. In this type we seldom meet with rigor, or lateritious sediment in the urine; the consecutive fever is not the prominent feature in the disease—it is quite disproportionate to the collapse, and appears to be merely the result of the injury received by the system during it; and recovery from a state of collapse approaching unto death, sometimes takes place without any fever.

I have found sulphuric acid an excellent tonic, when the pulse was flabby. Sulphate of quinine is a valuable medicine in many cases: the doses must be small, as the stomach does not bear it well.

A peculiar, and in bad cases not an unusual, form of this fever, I have heard spoken of under the name of *stinking fever*, an appellation which it well deserves. The patient's breath and person exhale an extremely offensive odour; the tongue is hard, dry, and

* Cycl. of Pract. Med.

glazed, like a parrot's, and also red; the countenance has a peculiarly haggard and relaxed expression; there is generally some purulent discharge at the inner angle of the eyes; the pulse is very weak and soft—the artery feeling flabby, like a soft string; he lies in a dozing or subcomatose state; when asked how he is, he answers in a feeble drawling voice, that he is “middling,” or “very poorly;” and (which is very remarkable) the alvine discharges are frequently natural. I do not know of any thing that is of so much benefit in these cases, as the aq. chlorinii. It is also useful to have chlorine continually disengaged near the patient: this may be easily effected by bending a glass tube, and stopping one extremity with lint, so that dilute sulphuric acid may pass through it *guttatim* from one vessel into another containing chloride of lime in solution. I have found it very advantageous to place the patient's bed in the centre of the room, and to move him from one apartment to another, that he might respire as pure air as possible. Personal cleanliness is very requisite. I have sometimes found the urine in these cases thick, white, and very fetid. In a remarkable instance of this, it was abominably fetid, acid, of the sp. gr. 1014.5, and the clear part, separated by filtration, on being heated, afforded a precipitate. Doctor Falloon, whose patient this woman was, gave her the aq. chlorinii, and on the following day (3i having been taken in the interval) the fœtor from her breath and person was greatly diminished, her urine was naturally clear, destitute of its former odour, and had the sp. gr. 1012.5 at the same temp. She died two or three days afterwards; but this

does not argue inutility of the medicine, for her death had been daily expected previously. In others, the breathing becomes difficult and the pulse frequent, a muco-crepitating râle is heard in the depending part of the lungs, without much dulness, a circumscribed crimson patch forms on the cheeks and there is a tickling cough, but the patient appears unable to expectorate.

Blistered parts require attention. In this state of the patient they are prone to ulceration: the fœtor of the discharge annoys the patient himself, and when a large surface is exposed, the irritation proves a greater obstacle to recovery than would perhaps be expected. A solution of chloride of lime mixed with cream or milk, is an excellent dressing.

A frequent concomitant of the stinking fever is death of a portion of the cornea and subsequent ulceration of it. The conjunctival layer is the first seat of this affection, and its earliest appearance is a haziness, or a few white specks occupying that part which is covered by the inferior palpebra. These specks soon coalesce and form one or more spots from the size of a pin's head upward, which resemble very much what are called "gifts" on the finger-nails. Sometimes a large portion of the lower part of the cornea becomes opaque, and it then looks like the white segment at the root of the nail. The conjunctival layer is next thrown off from the centre of the spot, which increases in circumference, whilst at the same time the laminæ of the cornea are successively exposed in the central part, and thus an ulcer is established. This affection is now no longer to be recognised

by a white spot, but by a slight excavation, transparent or nearly so, and surrounded by a white margin constituted by the most superficial layer of the cornea. At this time, therefore, it might be very easily overlooked, particularly as it is unaccompanied by pain or inflammation, and as it is concealed by a scum or muco-purulent secretion, which commonly lodges on the lower part of the eye at the period, and in that form of the disease, wherein the ulceration is apt to occur. The conjunctiva has a blood-shot appearance: but it is not to be inferred that the affection is of an inflammatory nature, for it is usually redder than natural at this stage of the disease, and the vessels are straggling, not very numerous, and distended with crimson blood which scarcely circulates in them. At first no pain is felt; but when the destruction of the cornea has made some progress, an itching or smarting is often complained of, especially if the patient be advancing toward recovery.

This affection is also met with in cases of very protracted collapse, when an attempt toward reaction is made. It occurs at every period of life, in infants as well as old persons; but the latter are the most liable to it, as they more frequently fall into the stinking fever, and betray a greater tendency to a softening of many of the tissues. Its progress and termination are, as might be expected, greatly influenced by the general state of the patient. In those who recover from the disease it is very manageable: in such I have not met with an instance where it did not yield to bathing of the eye, and to a few applications of a solution of the nitrate of silver. But in the cases that terminate fa-

tally, the death of the cornea continues to spread—slowly however, for I never saw the aqueous humour discharged in such before dissolution, nor even an ulcer established, though the patient should live four or five days from the first appearance of it. It is not so in the former cases, in whom the functions of circulation and absorption are more actively performed. Here ulceration advances more rapidly, and is sometimes more disposed to extend in depth than surface, insomuch that except the physician be on the look out for it, the first intimation of it to him may be a rupture of the cornea, occasioned perhaps by a fit of vomiting; or by the patient rubbing his eyes, as he is apt to do when in the sub-comatose state. In an instance of this which occurred to me, cataract immediately ensued. The outline of the case is as follows:—

Mary Mulhall, a middle-aged woman, passed from collapse into a state of fever partaking of the stinking character. Within forty-eight hours afterwards she had several fits of vomiting, during the night; and on one occasion, feeling moisture on her right cheek, she put up her hand, and found the eye “sunk,” as she expressed herself. Next morning, with that eye she could only distinguish the light, and complained of its retired state, which she attributed to the vomiting.

It now for the first time attracted my attention. It was distinctly less prominent than the other; the cornea was flaccid, but transparent; was smeared with a gelatinous sort of fluid, and presented a small ulcer below the level of the pupil, which was much more contracted than that of the other eye: the lens, which was

just so opaque as to be distinctly seen, appeared to be protruded against the back part of the iris—its opacity increased in the course of the day. There was a good deal of redness of the conjunctiva, but the vascularity was of a passive nature. Some sparkling objects and slight pain were perceived for a day. She recovered perfectly from Cholera in three or four days afterward: the ulcer had then healed transparent, the aqueous humour had been restored, and she complained of nothing but the utter blindness of that eye.

The issue of this case shows the importance of early information of the destruction of the cornea in this disease. It can be obtained only by daily examination of such as are likely to be subjects of it; for the dull and disgusting state of the patient, the absence of pain at first, and the transparency of the ulcer afterwards contribute to its passing unnoticed till it has made considerable progress: nor should an apparently hopeless state of the patient set aside this practice, as even then recovery sometimes takes place.

We should be very cautious in allowing solid food too early in convalescence. I have had the vexation of seeing patients who had recovered from a bad attack, die afterwards in a relapse occasioned by their friends giving them cakes, &c. It is however a mistake to confine them to gruel, flummery, and other forms of vegetable food, and to deny them animal nutriment in the fluid state: it leads to a tedious convalescence, attended with great debility, and sometimes with œdematous legs. The patient is more analogous to one recovering from a profuse hæmorrhage than from ordi-

nary fever or any inflammatory complaint; and I have never found any disadvantage from giving soup or jelly in moderate quantity.

When the bowels become confined in convalescence they should be opened by enemata, or by a mild and warm aperient, else colick symptoms are apt to arise. The exhibition of purgatives is attended with great danger: even a warm aperient should not be given without great caution, and the patient should be confined to bed during its operation. The first lesson I received on this subject was from my ordering a rhubarb draught to a convalescent patient, who was up and walking about: its operation was followed immediately by weakness, serous stools, collapse, and finally by death. A nurse-tender, convalescent from a severe attack, who had been a most troublesome patient in consequence of her prejudices, requested me to order her some purgative medicine. She refused an enema, "as she best knew her own constitution;" and I, warned by the foregoing case, declined giving any thing more powerful. On the following day she importuned me so much that I prescribed for her as follows:—*Rhei et magn. carb. a. gr. xv, zing. gr. v, tinct. rhei et tinct. card. c. a. ℥ii. aq. menthæ pip. ℥i.* She took this draught at bed-time, and in twelve hours afterwards she was in so great a degree of collapse that I entertained no hope of recovery: fortunately, however, she did recover.

With respect to mortality in this type I may remark, that except the character of the cases be taken into consideration, no information is conveyed by the relation of the deaths to the cases. There are some in

which death is almost inevitable, and there are other cases in which we might calculate upon recovery with equal certainty. In the worst form in which I have seen the disease prevail at any place, from one-third to one-half of those admitted to hospital died. At Enniscorthy, where it appeared in as bad a shape as I have witnessed in Dublin, 71 deaths occurred in 201 cases treated by me.

SECT. II.

OF THE SPASMODIC TYPE.

So much of my allotted space has been occupied by the blue type, which principally claims our attention, that it obliges me to pass over this and the following Sections in a more general manner. In the form of the disease we now come to examine, spasm is the most prominent feature. It returns in paroxysms at intervals of a few minutes, and no muscle in the body seems to be exempt from its influence. The heart's action sometimes ceases during the paroxysms; the lips and hands become blue and cold: retching or vomiting almost always exists; and diarrhœa, or even serous purging, very often ushers in or accompanies these symptoms.

From such appearances many of these have been regarded as bad cases of "Blue Cholera." The blueness and coldness are frequently as well marked as in cases of the blue type, and the patient is also sometimes pulseless: but other circumstances distinguish this as a

very different form of the disease:—the spasms are more general; they occupy the abdomen and upper extremities more than in the blue type, and they are often preceded by numbness, or by a prickling sensation in the limbs. Frequently the patient shrieks or moans, and when asked what the matter with him is, says “it is all in his bowels.” The arms are forcibly drawn across the chest, the jaws are sometimes closed, and occasionally the muscles of the back act so violently that the body is curved, which has led some of the Surgeons in India to describe these as cases of Tetanus. At the height of the paroxysm the patient writhes and flounders, so that the assistance of many persons is sometimes required to keep him in bed. The eyelids are not gaping as in the blue type, but generally closed, sometimes spasmodically so. In the intervals between the paroxysms the pulse returns to the wrist; and though it may be very small, it possesses a firmness not to be felt in the blue type. He is now in comparative ease, but still he generally complains of a gnawing pain in the epigastrium, and of præcordial oppression. If there be vomiting or purging, the fluid is generally ejected forcibly as from a syringe. The tongue is not flat, flabby, furred, or of a light-blue colour, as in the blue type; but narrow and elongated, and the tip is generally red and cold, and has a slippery feel, which is very characteristic of this type. The patient has an aversion to speak much, apparently from drowsiness or listlessness; the voice is not altered, nor is there noise in the ears; the fingers are not shrivelled, nor the muscles flabby; and on placing the hand upon the abdomen, instead of

feeling the spine or a mass of doughy, inanimate intestines (as in the blue type), we perceive it tolerably full and elastic.

The danger to be apprehended in these cases, is that this type may glide into the blue, a change which is apt to occur when the paroxysms continue for some hours. This appears to be occasioned by the cessation of the circulation during the paroxysms, from spasm of the heart, the removal of which may therefore be expected to constitute an important step in the treatment. Venesection is in general the promptest and most efficacious mean for effecting this. When a vein is opened, very dark blood escapes at first, and as it flows it becomes brighter; if a paroxysm now occur, the blood will cease to flow from the vein, and the pulse will become thready or even imperceptible; but as the paroxysm subsides, the pulse returns, and the blood again flows, at first very dark as before, and afterwards bright; the pulse becomes more developed, and the patient more tranquil; he feels relieved from præcordial oppression, and the paroxysms cease, probably altogether.

But is venesection always necessary? or always safe? Certainly not. In mild cases an emetic, with mustard poultices to the spine or epigastrium, is in general sufficient to remove the spasms. An Ipecacuanha emetic is allowable in a few cases: but when there is a tendency to collapse, or—even though the pulse, skin, and expression of the countenance do not indicate it—if there be serous purging, it is a very hazardous medicine. I have seen the blue type with all its horrors induced in two hours by it. In such cases ζ ii of mustard suspended

in ℥vi or ℥viii of water is the best emetic I know of. It is better to give it thus in a large quantity of water, as its influence is thereby diffused more over the stomach, and the dose is rendered less concentrated. When there is no tendency to collapse, and no serous purging, gr. xv of Ipecacuanha with ℥ii of mustard constitute a very excellent emetic.

The cases in which venesection is dangerous are those of an asthenic character, denoted by the state of the pulse, by some sinking of the eyes, relaxation of the skin, and in short by a general tendency to the blue type. In these, general bloodletting, instead of removing, increases the cramps, and hurries the patient into collapse. A sinapism to the spine, and a stimulating draught with friction, are the chief means on which I have here relied. Dashing the face with cold water sometimes cuts short the paroxysm.

But when the pulse, though imperceptible during the paroxysms, and though small in the intervals, is firm under the finger; when the muscles have a firm feel, and the eyes present no appearance of collapse farther than a dimple in the lower palpebra; when the cheeks preserve their plumpness and firmness, when the lips recover some of their redness in the intervals, when the voice retains its vigour and tone, and when the patient writhes much, venesection is not only safe, but advantageous. I do not mean that such cases cannot recover without it, for I know that they can (having omitted its use in some for the purpose of judging more accurately of its effects); but those in which it is employed recover more rapidly, with less fever, and with fewer visceral

affections. The abdominal viscera are very subject to be injured by the paroxysms; venesection cuts short the spasms, and so diminishes the probability and amount of this injury. Even when general bloodletting has been largely resorted to, if the paroxysms have existed long and have been very violent, pain and tenderness are frequently experienced afterward in various parts of the abdomen, which are attended with fever, and require the employment of leeches, fomentations, &c.

It is obvious that cases may be presented to us which partake of the indications for and against venesection. These are the most trying to the practitioner: of course we are to be guided by our judgment upon the assemblage of all the symptoms; but the safest side we can err upon is its omission. Whether venesection was resorted to or not I have in general given a stimulating draught, combined sometimes with an anodyne: the patient falls asleep, and awakes much improved. Purging and vomiting, though previously existing, are now seldom complained of. Next day, he is drowsy and feverish: but an aperient usually removes this, and his strength and appetite return with a rapidity that surprises us.

After blood-letting the patient has a tendency to sleep, and I believe the exhibition of opium is in general unnecessary. If we do give it, it should not be with a liberal hand. In the following case the patient was with difficulty saved from the effects of what most writers represent as a moderate dose in this disease:—At seven in the evening the nurse of one of my wards was seized with violent cramps in the abdomen and extremities,

and she was thrown into a state of great agitation. Concluding that she was pregnant (as she was reputed in the hospital to be so, and a married woman), I considered an emetic (which would have been the most appropriate measure) unsafe ; and blood-letting I regarded as hazardous until she had first taken a stimulant : I therefore ordered a foetid enema and the following draught :—tinct. Hyosc. et tinct. opii, a. gtt. xx, æth. sulph. et tinct. Val. am. a. ℥ij, tinct. Card. c. ʒij, aq. Cinnam. ʒiss. Half an hour after her taking this I was informed that she had thrown it up : she was now in the utmost distress, and being apprehensive that abortion (though she was not pregnant, as I afterwards ascertained,) would be the result, I ordered the draught and enema to be repeated ; and the pulse being now firm, I took ʒxx of blood from the arm. In the course of an hour the spasms subsided, and she soon fell asleep. At one the next morning I found her quite comatose : her respiration was stertorous, her pupils contracted, and I was unable to rouse her or procure an answer. I immediately took ʒxvi of blood from the ext. jugular vein, shaved the head, applied sinapisms to it and to the legs, ordered purgative enemata, and gave a few doses of carb. of ammonia. After the venesection she spoke ; the coma disappeared in the course of 24 hours, and she was perfectly recovered in three or four days afterward. The greater part of the first draught was probably retained.

A warm enema of ol. tereb. and assafoetida is a very good auxiliary. Sometimes the patient is so uneasy that its injection is almost impracticable ; and it is frequently

expelled as from a syringe as soon as administered. The cases in India, in which the warm bath appears from the details themselves to have been serviceable, were evidently of this and of the febrile type : I never found it necessary to have recourse to it. The actual cautery is in the blue type really more calculated to extinguish the remaining spark of life than to cherish it. An experienced physician told me he tried it upon the spine in two cases, and that nothing could induce him to employ it again. In the spasmodic type it is not more justifiable : for even granting—what no person of experience in the disease will concede—that it would effect a cure, it is nevertheless an unwarranted practice ; for these cases can in general be cured in three or four days by simple means, and every surgeon knows that such an eschar would not be healed for a much longer period. M. Bouillaud recommends a mode of counter-irritation which is more allowable, namely—placing on the spine a stripe of flannel dipped in a mixture of ol. tereb. ζ i and aq. ammon. ζ i, over this a stripe of linen wetted with luke-warm water, and then drawing a heated iron over the latter. Any fever that arises in this type coincides with that to be described in the following section, and therefore it needs not be noticed here.

SECT. III.

OF THE FEBRILE TYPE.

By the febrile form of the disease, I understand that wherein symptoms of fever prevail almost from the first. Rigor, whilst it is seldom met with in the blue and spasmodic types, generally ushers in this. The patient is in a slight degree of collapse at first: retching or vomiting is almost always present, and frequently purging of bilious or even serous fluid: sometimes the bowels are in a natural state; at other times they can scarcely be moved, whilst at the same time he is perhaps harassed with vomiting. He has numbness or formication in the extremities, or pains or slight cramps in the calf of the legs: but his great complaint is pain in the abdomen—by some described as a cutting pain in the bowels at or below the umbilicus, and by others as a squeezing or gnawing pain at the scrob. cord. It is constant, but aggravated in paroxysms; and it is relieved by pressure and by warmth. Præcordial weight and oppression are also felt: the eyes are suffused, and tears are sometimes squeezed from them in the paroxysms of pain.

The treatment which I have found beneficial at this period is a sinapism to the epigastrium or spine; and an emetic of Ipecacuanha, or of this with mustard, when there was merely retching or imperfect vomiting: but if the stomach appeared to have been fairly emptied, a draught of camphor mixture, ether, and some of the ammoniated spirits, with or without tincture of opium.

When serous purging is present, a nauseating emetic is dangerous, and the acetate of Lead is proper. If there be no purging, a foetid or domestic enema given warm diminishes the abdominal distress.

By these means reaction is brought about in an hour or two, or it may take place spontaneously. We then find the patient in the following state:—His skin is warm, sometimes warmer, and in general more relaxed than natural; the cheeks are somewhat flushed; the eyes suffused and heavy; the tongue broad, furred, frequently concave superiorly; there is much thirst, and cold water or acid drinks are preferred; sometimes there is vomiting of drink, or of bilious fluid; or purging of bilious or serous fluid; and sometimes the bowels become obstinately confined; a squeezing pain is generally felt at the scrob. cord., or in some other part of the abdomen, and if it continue long, the part becomes tender; frequently pain is complained of in some part of the spine, or occiput; the pulse is full and soft, in general from 80 to 100, sometimes from 50 to 60; there is præcordial oppression and much prostration; the urine is sparingly secreted at first, and sometimes it is retained for one or two days.

The symptoms that principally engross our attention in this type are the pain in the abdomen, the præcordial weight, prostration, obstinate vomiting, purging, pain in the spine or occiput, relaxed skin, and sometimes a full, soft, or slow pulse. The abdominal pain is relieved by fomentations, leeches if there be tenderness, and by opening enemata if the state of the bowels indicate them. But frequently the pain is very severe; the patient

moans and cannot lie in any position longer than a few minutes, the bowels are generally confined, and medicine seldom remains on the stomach. Under these circumstances, if the pulse possesses its natural firmness, venesection should not be deferred. We may employ leeches, fomentations, and enemata, with some relief—but in general it is only temporary; the enemata are often voided as injected, and at length, after the lapse of twelve or twenty-four hours, when the patient has become so much worse that we cannot avoid being alarmed for his safety, we are obliged to resort to general blood-letting. Even then it often gives immediate relief. I have known the pain to be removed by the time the arm was tied up, even when it was accompanied with tenderness, and the patient to be at his usual business within twenty-four hours. Is this inflammation? I cannot conceive that it is: yet, if in the blue type inflammation exists, unattended too with tenderness, cured by astringents and stimulants, and not benefitted by blood-letting, it would follow *a fortiori* that the affection we are now speaking of, consists in inflammation. If it be not subdued before the third or fourth day, I do not hesitate to believe that inflammation may be then found to exist, for under such circumstances I have seen the blood buffed, and the symptoms have altered so as to leave no room for doubting it. Frequently black stools are voided during the recovery.

Bloodletting is also serviceable in relieving the præcordial oppression, pains in the spine, occiput or limbs, and in cutting short the fever; but it is not required in even half the cases of the febrile and spasmodic types.

From notes of 413 such cases which passed through my hands at Grangegorman-lane Hospital during three months, I find that general or local bleeding was employed in 180, venesection in 134, and leeches or cupping in 72. Of the entire number six died, one became maniacal, and the rest recovered perfectly.

A circumstance of great importance to be kept in mind in the management of cases of this type is the danger of their being thrown into the blue type by purging. Saline purgatives are particularly objectionable. In one case, I ordered in the morning Epsom salt, in consequence of the bowels not having been sufficiently freed by other medicine taken the day before; and in the evening the patient was so bad an example of the blue type that death was apprehended: recovery fortunately took place.

The remainder of the general treatment needs not to be noticed: and I shall proceed to mention some peculiar forms in which this type sometimes showed itself. Some patients were brought to hospital in a stupid, subcomatose state, sometimes moaning, with the pupils dilated, and with a full sluggish pulse: they appeared sullen; it was difficult to procure an answer as to their complaint, and they seldom terminated what they intended to say. Serous or bilious purging is sometimes present. We cannot avoid being alarmed lest these patients should die from coma: however, they generally recover under the employment of general or local bleeding, and sinapisms to the head or back of the neck. Opium should not be given to allay purging.

A second class of cases is that wherein purging is

troublesome. Sometimes the stools are like gruel or barley-water. I know of nothing so beneficial then as the acetas plumbi. At other times the stools are bilious; but they are not the stools of common diarrhœa: they are a mixture of the gruelly stool and feculent matter with a little bile. Hyd. c. creta with opium, or similar preparations, will, I believe, cure all these. In other cases there are cutting pains in the bowels, and the stools are occasionally streaked with blood; even the urine is now and then bloody. These bloody stools do not at all indicate the same danger as those passed in the blue type. When the pulse admitted of it, I have found venesection very beneficial. Leeches, fomentations, liniments, anodyne enemata, vegetable astringents and opium, are also very useful.

In another class of cases there is obstinate vomiting. The thirst is excessive: water or acidulated drinks are earnestly called for, and are as frequently thrown up, sometimes coloured yellow, in a few instances green. These cases may commence with purging, but the bowels generally become confined and can scarcely be moved: when they are operated on, dark, slimy stools, or scybala, are passed. The eyes become injected, the countenance is expressive of great anxiety, and at length of despair; the patient supplicates us in the most piteous manner to give something to stop the vomiting, and he cannot resist the desire for drink, though he knows he will throw it up the next minute. The pulse is small and frequent, and the skin cool. If the vomiting be not relieved before the third or fourth day, he becomes drowsy or comatose. It is of great import-

ance in these cases to move the bowels, and we almost in vain attempt to do so with medicines taken by the mouth : our chief reliance is upon purgative enemata. If the pulse, though small, possess firmness, venesection is borne well, and it is of great service in allaying the vomiting and in relaxing the bowels. When it cannot be resorted to, leeches to the epigastrium, a sinapism to the spine, or cupping, are beneficial. The previous application of a sinapism facilitates the obtaining of blood by cupping, when the cutaneous circulation is languid. Spring water is an excellent drink in these cases. If charged with carbonic* acid by means of a Nooth's apparatus, it appears to me to remove thirst better, and to lie easier on the stomach. The inf. *Menthæ simpl.* flavoured with lemon juice and sugar, or a dilute almond emulsion, sometimes agree very well. Saline draughts disappoint our expectations : with the addition of laudanum, the vomiting can be always subdued ; but the patient has a greater risk to run then—that of coma. A long narrow blister to the spine is very beneficial. If acid prevail in the contents of the stomach, *aq. calc.* or *pot. caust. aq.* is proper : even when there is no acid, they are sometimes useful. If prussic acid is allowable in any form of Cholera, it is in this.

Tympanites characterises another group of cases. There is seldom purging or much vomiting, but a “dry retching” : the abdomen becomes enormously dilated in

* For this purpose, if white marble cannot be procured, oyster-shells form an excellent substitute : the common compact limestone of this country does not answer, on account of sulphurets which it contains.

the course of a few hours, and the distension occasions so much agony that I have found it necessary to tap the intestines by a long tube of elastic gum introduced per anum. In the course of ten or fifteen minutes a large quantity of gas escapes through the tube; and before it is withdrawn, I have found it advantageous to throw in an enema of ℥ij of assafoetida rubbed up with the yolk of eggs, ℥ii of ol. tereb. and ℥xiv of warm water. Magnesia and carbo ligni in aq. foenic. with a little syr. zing. taken every second hour is a good medicine in these cases. This tympanites, like that occasioned by injury of the spine, appears to be dependent upon the derangement of the spinal chord: some of those patients had pain in the spine, and the most aggravated instance of it was attended with paralysis.

Pain in some part of the spine or occiput was the chief complaint in another class of cases. This was sometimes very severe, and compared to a sawing of the bones. It was generally removed in two or three days by venesection or cupping, and the use of a stimulating liniment. These cases were at one period so common that I found it necessary to keep the liniment in the wards. Aperients were generally necessary, and brought away black, tarry, fetid stools. Paralysis occurred in a few: they all recovered.

In the progress of other cases a local pain in the head was much complained of. In some it existed in the occiput, in others in one or other temple, in the situation of the frontal sinus, or in the top of the head. Noise and light annoyed them much: the scalp became soft and spongy, and so tender that the razor

gave great torture : the pulse varied from 50 to 90, and was generally very hard and resisting : the skin was not hot, sometimes cooler than natural, and the feet could not be kept warm : the urine was greatly diminished—occasionally only $\frac{3}{4}$ ij were secreted in a day : the bowels were obdurately confined ; sleep could scarcely be obtained, and acid drinks were much desired. These cases all occurred in females with defective menstruation ; their sufferings were very great, and lasted for a week or longer. The means I employed are venesection, arteriotomy, leeches to the temples, nostrils, and pudenda, shaving of the head and the application of cold and blisters, warmth to the feet, and purgatives, diuretics, sudorifics, and calomel : I have also leeches to the scalp, and have enveloped it in a poultice afterward, with the view of relieving the tenderness. I cannot speak favorably of any treatment in these cases : in some the disease appeared to be worn away by time, rather than subdued by treatment ; and in others I was at length obliged to compromise with it by a seton in the back of the neck. All of them recovered but one, who became maniacal, and who is now two years so : she was, however, neglected in a great measure, from the commencement of the mania till her admission into an asylum a month or two afterward. Leeches to the nostrils and a seton in the neck were of most use : but I would certainly desire some other more satisfactory treatment.

Another class of cases sweated profusely : the skin was warm ; the pulse very full, and slow ; and they complained of “a great load on their heart,” and of

weakness. At first I avoided any thing that might interfere with the diaphoresis, which I thought might be a critical mean of getting rid of the disease ; but I afterwards found that so long as the sweating continued, no improvement took place. Venesection, cinchona, and sulphuric acid, I found of most use.

The last variety of this type which I have to notice is I believe rare. The patient has the characteristic purging and vomiting ; the urine is suspended or nearly so ; the skin is pale and inelastic, or corrugated, but not cold ; the pulse is below 90, full and soft, sometimes the artery feels enormously dilated under the finger, and its pulsation is visible at the distance of some yards from the patient ; the cheeks are flabby, and the countenance wears a haggard, sleepy look. The patient has a great tendency to doze : he awakes asking for a drink ; and seizing the vessel with both hands, he commences to drink ravenously, yet he is easily satisfied : there is a great sensation of weakness ; but the most remarkable circumstance attending these cases is, that though at first they appear mild and likely to recover in a few days, they have a great tendency to terminate fatally in that time. They all occurred in the course of about ten days ; and the subjects of them were persons from forty to sixty years of age. I was so dismayed by the unexpected mortality in them, that I consulted one of my colleagues on the subject. He said he had not met with such cases ; and I brought him to see the only one then remaining, a woman forty years of age, of whose life I was very apprehensive, notwithstanding she was so far improved that I had been enabled to give her sulph.

of quinine. He thought it would be very extraordinary if such a case would terminate fatally: this I mention to show how deceptive these cases are. Those that died moaned almost continually; and when questioned as to the cause of it, they could not assign any: they became comatose and fell into collapse. My time was so much occupied when these cases occurred that I was unable to keep notes of them, but the means that were most beneficial were sulph. of quinine and sulph. acid, as soon as the bowels admitted of their exhibition. Two appeared to require venesection to remove coma, and it was performed: one recovered. The coagulum of the blood of the other presented an appearance which I never before saw; half of it was fibrin destitute of the colouring matter. It certainly did not imply inflammation, for it was as soft as jelly, and had a plane surface. The only account of such cases, that I have met with, is that given by Mr. Anderson in India so far back as the year 1794. At the same time, I remarked that many of the other febrile cases had a tendency to this variety: it was more difficult to restore them to convalescence; they were languid and listless; the pulse was slow, full and soft, and they complained of more weakness than could be accounted for. Cinchona, sulph. acid, and magnesia mixtures with pil. hyd. were the most useful of the means employed.

DURING the prevalence of Cholera, anomalous spasmodic affections were common. Fatigue, the want of necessary rest, and intoxicating liquors, appeared to be the exciting cause. The following case furnishes a well marked instance of these:—At two o'clock one morning, a young man named Owen Brogan (a newspaper crier, I believe), was carried to the Grangegorman-lane Hospital by two men, who said he was dying. His respiration was so sonorous that it was audible at a considerable distance, his lips were blue, his hands blue and cold, he was in the utmost state of anxiety, could not utter, and appeared in great danger of suffocation. When asked as to his state, he pointed to the larynx: just above the sternum the skin was forced in by the pressure of the atmosphere so as to form a deep hollow; and he had cramps in his legs. His pulse, though small, was tolerably firm; and by examination of the abdomen, I ascertained that he had no purging. I therefore opened a vein in the arm, and when $\frac{3}{4}$ xiv of blood were drawn, he could utter a little: a hippo emetic, an enema of assafoetida and oil of turpentine, and a sinapism applied to the throat like a cravat, completed the removal of the spasm. At nine A. M. he was quite well, with the exception of a little fever and hoarseness, which disappeared on his taking an aperient.

It is not to be expected that every case of Cholera shall be found to belong distinctly to one or other of the above three divisions of the disease. These are only so

many heads to which we may refer them for the convenience of describing the symptoms and treatment : but they glide so insensibly into one another, that some are met with which cause a difficulty to us in determining whether they partake more of one or another of these types.

THE END.